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DISEASES CAUSED BY BACTERIA AND FUNGI

THIERY, J.-P. & RICHOU, R. (1950.). Sur le contrôle de l'innocuité et de la valeur antigène de l'anatoxine staphylococcique. [Tests of the safety and activity of staphylococcus anatoxin.]—*Bull. Off. internat. Epiz.* 33. 304–313. 1905

The authors point out that in spite of the effectiveness of antibiotics, such as penicillin, they do not confer protection against repeated attack by staphylococci. The use of a suitable anatoxin is still therefore necessary and a properly standardized anatoxin must be made available.—MALCOLM WOODBINE.

SHERRIS, J. C. & FLOREY, M. E. (1951.) Relation of penicillin sensitivity in staphylococci to clinical manifestations of infection.—*Lancet.* 260. 309–312. [Authors' conclusions copied verbatim.] 1906

In this study there was a clear bacteriological distinction between penicillin-sensitive and penicillin-resistant staphylococci. All sensitive strains were of the same order of sensitivity as the Oxford staphylococcus and all the resistant strains produced penicillinase. The two types of staphylococci were in the main associated with different types of lesions—the penicillin-sensitive strains with acute and closed or deep-seated infections, whether acute or chronic; the resistant strains with superficial lesions. The penicillin-resistant staphylococci were significantly less often associated with signs of inflammation or suppuration than the sensitive strains.

STĚPÁNEK, M. (1950.) Streptokokové mastitidy skotu. [Streptococcal mastitis in cattle.]—*Čas. československ. Vet.* 5. 360–369. 1907

A review dealing with immediate and predisposing causes of bovine mastitis, the examination of milk, therapy and preventive measures.—A. MAYR-HARTING.

FAUSTINI, R. (1950.) Azione in vitro del cloramfenicolo (farmicetina)—del 4-4'-diamino-di-

fenilsulfone e loro associazione sue comuni germi della mastite bovina. [Action in vitro of chloramphenicol and 4-4'-diamino-diphenyl-sulphone; their action against organisms causing bovine mastitis.]—*Clin. vet., Milano.* 73. 99–105. [English, French and German summaries. Abst. from English summary.] 1908

Chloramphenicol has an effect on Gram-positive organisms (*Streptococcus agalactiae*, *Str. dysgalactiae*, *Str. uberis*, *Staphylococcus aureus* and *Str. pyogenes*) causing bovine mastitis nearly identical to that of penicillin, superior to streptomycin and 4,4'-diaminodiphenylsulphone, while its effect on Gram-negative organisms (*Salmonella paratyphi A*, *S. Paratyphi B*, and *Bacterium coli*) causing bovine mastitis is superior. A combination of chloramphenicol and 4-4'-diaminodiphenyl-sulphone increased the effect on organisms which are sensitive to these drugs used separately.

BUTAYE, R. (1946.) De breed β haemolytische streptococcen afkomstig van honden. [β -Haemolytic streptococci isolated from dogs.]—*Vlaam. Diergeneesk. Tijdschr.* 15. 127–131. 1909

It is stated that many infectious processes in dogs are caused by β -haemolytic streptococci. The majority of streptococci isolated from dogs were of group G, some of groups C and para-A. Two out of 20 strains isolated from dogs were of human origin. Pathogenic group G streptococci were also isolated from a pig.—E. G.

IRRGANG, K. & DÖRNBRACK, U. (1949.) Über chemotherapeutische Zusammenhänge bei der Penicillinbehandlung der mit *Streptococcus aronson* infizierten weissen Maus. [Chemotherapy and penicillin therapy of white mice infected with *Str. aronson*.]—*Zbl. Bakt. I. (Orig.)* 154. 325–331. 1910

Doses of 40–60 units of calcium penicillin per 10 g. mouse administered subcutaneously were effective against an infection of *Str. aronson*.

—MALCOLM WOODBINE.

NARDI, E. (1950.) Contributo allo studio della setticemia streptococcica delle cavia. Ricerche sperimentali su un focolaio di infezione spontanea da *Str. zooepidemicus*. [*Streptococcus zooepidemicus* (*Str. pyogenes*) septicæmia in g. pigs.]-*Riv. Med. Vet. Zootec.* 2. 191-202. [English summary.] 1911

Of a group of g. pigs confined in the same box, 83% succumbed within six days to infection with *Str. zooepidemicus*.—G. P. MARSHALL.

HANNAY, C. L. (1950.) The serological identity of a yellow-pigmented *Streptococcus*.—*J. gen. Microbiol.* 4. 294-297. [Author's summary slightly modified.] 1912

A yellow-pigmented *Streptococcus* was isolated from certain dairy cows. The three strains examined were closely related to *Str. faecalis* but differed from it in fermenting raffinose. The organisms produced a tyrosine decarboxylase. Serologically the organism belonged to Lancefield group D, Sharpe type 10.

HAUGE, S. (1950.) Den serologiske likhet mellom streptokokkgruppen L (Fry) og N (Ernst) i Lancefieldsystemet. [The serological identity of the streptococcal groups L (Fry) and N (Ernst) in the Lancefield system.]-*Nord. Vet.-Med.* 2. 613-621. [English and German summaries. Abst. from English summary.] 1913

On the basis of serological and biochemical analyses of representative strains and sera of groups L and N it seems evident that these groups are identical. All strains (22) fermented lactose, saccharose, and trehalose, but not sorbitol. Eleven strains out of 22 split sodium hippurate. Two English strains attacked aesculin which none of the others did.—For the Lancefield grouping two different extracts of each strain were used; the ordinary hydrochloric acid extract, and the Maxted enzyme extract.

Extracts of all strains examined reacted to the same degree with sera of groups L and N. Cross absorption tests were performed and these also point to the identity of groups L and N.

As groups L and N appear to be identical, the latter designation should not be used as group L was first established by Fry, who has the priority.

NUNES, D. S. (1950.) Demonstration of agglutinins five hours after intraperitoneal injection of pneumococcus Type I in guinea pigs.—*Canad. J. Res. Sec. E.* 28. 298-306. [Author's abst. copied verbatim.] 1914

The inoculation of guinea pigs with pneumococci Type I intraperitoneally resulted in the development of homologous agglutinating anti-

bodies, which were detected in the sera as early as five hours after inoculation. The early appearance of active immunity, and the attainment of a sufficient titer, would appear to govern survival to a fatal homologous reinfecting dose of the organisms.

SALEY, P. I. (1949.) [Influence of weather on sheep and goats vaccinated with "STI" anthrax vaccine.]-*Veterinariya, Moscow.* 26. No. 8. pp. 20-21. 1915

The injurious effects of low temperature, below freezing-point at night, with concurrent heavy rain, high winds and a high relative air humidity were discussed in connexion with severe reactions in sheep and goats that had recently been vaccinated with "STI" anthrax vaccine. During two periods, from May 20th-22nd and from May 29th-June 6th in 1947 when these bad weather conditions occurred, four flocks of sheep and goats totalling 1,456 animals were vaccinated. Of these 318 developed large swellings and 63 died. The weather during the interim period from May 23rd-28th was hot, dry and with a low relative air humidity. During this interim period three flocks, comprising 1,316 sheep and goats as well as 53 calves, were vaccinated with the same batch of "STI" vaccine and none developed any symptoms.—F.A.A.

HAILER, E. & HEICKEN, K. (1950.) Untersuchungen zur Bekämpfung des gewerblichen Milzbrandes. VI. Mitteilung. Zur Frage der Milzbrandgefährlichkeit ausländischer Schaf- und Ziegenfelle. [Control of industrial anthrax. VI. The danger of imported sheep and goat skins.]-*Z. Hyg. Infektkr.* 131. 443-459. 1916

Of 2,338 goat skins, 21.6% were shown by culture to contain anthrax spores. The most dangerous infected material came from Asia; but there may be a high percentage of infection in goat skins from the Balkans, Spain, Morocco, Mexico, and the West Indies. Of 1,902 sheep skins, 8.6% were bacteriologically proved to be infected. The greatest frequency of infection was seen in skins imported from the Balkans (Yugoslavia), Spain, Brazil, and Argentina. The great majority of positive findings occurred in the fleece or hair on the skins. Anthrax spores were demonstrated on culture in only 77 of 200 cow hides positive to the Ascoli test.

—W. R. BETT.

MINETT, F. C. (1950.) Sporulation and viability of *B. anthracis* in relation to environmental temperature and humidity.—*J. comp. Path.* 60. 161-176. [Author's conclusions copied verbatim.] 1917

Under favourable temperature (98° to 90° F.) and other conditions, sporulation of the anthrax bacillus, whether in a dilute serum medium or blood, has commenced by eight to ten hours; at less favourable temperatures (70° F.) by 24 hours. Sporulation on the opened carcase is largely dependent on the surrounding air temperature. At 90° F. spores are formed in the blood exuding from severed neck vessels, whereas at 60° to 70° F. the bacilli gradually disintegrate with the growth of contaminants. In blood removed from the carcase and stored at this lower temperature but at the same time protected from gross contamination, sporulation may proceed slowly. Sporulation is possible in dry sterilised soil to which water is added to give a moisture content of about 3 per cent. Spores in bottles of sterile muddy water, stored in a pond on the plains of North India, survived in undiminished numbers during an experiment lasting just over two years.

Survival of anthrax bacilli in blood dried on glass slides depends on the rate of drying and the conditions of storage. Survival is promoted by slow drying in relatively moist air at room temperature followed by storage in dry air at room temperature. Survival for 60 and 90 days was noted under these circumstances. The converse conditions bring about comparatively rapid death of the organism. A few bacilli survived as long as 100 days in anthrax blood dried in tubes and exposed in the winter on the plains of North India to the daily fluctuating temperature and humidity. Of surfaces tested, the following were bactericidal for anthrax bacilli in blood: iron, zinc, copper, brass, limewash, lead paint and tar. The bacilli survived for over 634 days in blood mixed with dry sterile soil and stored in dry air at room temperature; in wet soil at air temperatures of 60° to 70° F. they survived for 20 days in unsterilised and 38 days in sterilised soil.

In goats dead of anthrax the bacilli commonly survive for a week in bone marrow (air temperature 64° to 74° F.) and for about two weeks in the skin (air temperature 50° to 60° F.). Survival in these situations is mainly a question of air temperature, and much longer periods have been noted by other workers.

Records are given of the mean temperatures of the water in ponds in North and South India over one year.

DJAENOEDIN, R. (1950.) Miltvuurkiemen in aarde. [Anthrax spores in the soil.]—*Hemera Zoa*. 57. 69–81. [English and French summaries. Abst. from summaries.] 1918
Anthrax spores were present in seventeen

out of 28 samples of soil from five places where animals that had died from anthrax had been buried. The samples were taken 1, 3, 5, 14 months and 7 years respectively after the animals had been buried.

An area of ground on which animals had been buried and that had been disturbed by building operations and cultivation still contained anthrax spores at a depth of 50 cm. after a period of 27 years.

The spores were found in 31 out of 39 samples of material from a yard, a buffalo corral and five places where animals were slaughtered. They were found in only one out of 22 samples from "anthrax-pastures" and from a plantation of *Panicum maximum*.

In an examination of worms taken from soil contaminated with anthrax, the bacilli were demonstrated only in those taken from a place where buffaloes had been buried three months earlier.

STENIUS, R. (1949.) Nötkreaturstuberkulosen i Finland. [Tuberculosis in cattle in Finland.]—*Nord. Med.* 42. 1219–1221. [Abst. from English summary.] 1919

TB. in cattle was probably introduced into Finland during the years 1848–50 in connexion with the import of breeding stock. In 1889 veterinarians drew the attention of the Board of Health to the occurrence of the disease. The first investigation of TB. was carried out in Finland in 1891; the first statute concerning control of the disease was passed in 1889. The intracutaneous test was adopted in 1911. Up to 1933 Bang's system was used for control, but since then S. has used a method of his own, the principle of which is first to ascertain whether the cattle are infected with tubercle bacilli of bovine, human or avian type. Control measures then adopted vary according to the circumstances: if the infection is of bovine type the whole stock is ruthlessly slaughtered; if human type bacilli are involved, the source of infection is removed, when the cattle themselves will eliminate the infection from their bodies; in cases of avian type infection the source of infection is removed by the slaughter of poultry and further examinations are carried out in order to ascertain whether the cattle have latent or manifest avian type TB.

Finland is entirely free from bovine TB., but tuberculin testing is still carried out, the chief reason being to supervise the state of health among cattle and to eliminate human and avian sources of infection from cow byres.

HEDVALL, E. (1949.) Bovine tuberkulos hos människa snart besegrad i Sverige. [Bovine type tuberculosis in man will soon be defeated in

Sweden.]—*Nord. Med.* 42. 1215–1218. [Abst. from author's summary.] 1920

A report is presented regarding the incidence and spread of bovine type TB. in man in Sweden and the measures taken to prevent its occurrence. Effective co-operation has developed between physicians and veterinarians. The physicians are required to report definite or suspected cases of this disease in man to the Ministry of Health, which then arranges for a veterinarian to examine the cattle on the farm from which the milk was delivered. On the other hand the Ministry of Health reports cases of udder TB. in cattle to the nearest "central" or "district dispensary" through which examination of persons who have ingested milk from a diseased cow are carried out. Laws forbidding the sale of milk other than in the pasteurized state have been enacted for cities and for rural districts, where health regulations similar to those in the cities are in force, except that milk from cattle that are under continuous inspection and control by the state may be sold in the raw state.

The most important measure, however, is the eradication of TB. in cattle.

Since 1940 Sweden has been divided, with regard to cattle, into "TB-free", "protected" and "other" areas: For the first area there is a provision requiring the reporting of every newly discovered case of bovine TB., obligatory tuberculin tests and compulsory slaughter of positive animals. The importation into the area is forbidden of cattle that have not been passed as free from infection. The "TB-free" area at present comprises nearly 72% of the total area of Sweden. In the remaining areas nearly 90% of the cattle are under tuberculosis control.

TB. in cattle is now rapidly regressing in Sweden. In all probability the disease will be completely eradicated in the near future, and thereby it will cease to be an important source of infection for man.

KRAMER, Y. M. (1950.) Plan voor T.B.C.-bestrijding. [A plan for the control of TB.] —*Tijdschr. Diergeneesk.* 75. 181–186. 1921

K's. plan is to isolate and use all cattle which are not TB-free or to run them in an all-infected herd. Such poor prices are obtained for positive reactors that there is a tendency to keep them along with healthy animals. K. suggested that a fund might be raised by a levy on milk prices, not charged on TB-free milk, and not charged to dairy farmers who were accepting reactors and housing them apart from healthy cows.

The farms which house reactors should be subjected to special precautions and the animals

should be branded. Calves in these infected herds should be removed immediately after birth. Such farms would diminish in numbers as the reactors were killed off, but in the meantime they would represent both the means of housing the reactors eliminated from otherwise non-infected herds and also a means of saving farmers, whose herds were predominantly infected, from greater financial stress. A certain amount of adjustment would be needed between one province and another, and these could be made by the Ministry of Health.

—W. TATHAM THOMPSON.

BARIÉTY, M., VITTOZ, A. & SIFFERLEN, J. (1950.) Contribution expérimentale à l'étude du terrain dans la tuberculose. La tuberculose aérogène de la souris à évolution prolongée. [Tuberculosis in the mouse from infection via the nose.]—*Pr. méd.* 58. 1434–1436. 1922

A general account of TB. in mice caused by nasal instillation of infective material.

—W. R. BETT.

TINNE, J. E. & HENDERSON, J. L. (1950.) Primary streptomycin-resistant tuberculosis in a newborn child. Simple method of assessing streptomycin resistance.—*Lancet*. 259. 901–904. [Authors' summary copied *verbatim*.] 1923

A case of miliary tuberculosis in a young infant yielded cultures of *Myco. tuberculosis* showing a high degree of primary resistance to streptomycin. The probable source of infection was the mother and neither mother nor baby had previously received any streptomycin. Resistant variant bacilli are usually very scanty in cultures made before the start of streptomycin treatment, but in the present case they were numerous.

A simple vertical diffusion streptomycin-sensitivity test is described which demonstrates higher degrees of streptomycin resistance than does the standard Dubos test, and also indicates the number of resistant variants present. The prognostic value of a streptomycin-sensitivity test on organisms isolated before the inception of streptomycin therapy is emphasised, and a plea is made for the routine performance of a simple initial test such as the vertical diffusion test described.

LEYVA, J. F. (1948.) Biochemical studies on tuberculosis: II. The nucleic acid reaction of the serum in tuberculosis.—*J. Philippine med. Ass.* 24. 327–333. [Abst. in *Bull. Hyg. Lond.* 24. 481. (1949). copied *verbatim*. Signed: J. ROODHOUSE GLOYNE.] 1924

This report describes a serum reaction for tuberculosis which, in the author's view, closely

follows the activity of the disease, increasing with activity and receding with quiescence. The test is based on the detection of thymus nucleic acid in the serum of peripheral blood drawn from a vein in the usual way. The technique is as follows: 0.2 cc. serum is placed in a test tube, after which are added in turn 0.8 cc. distilled water, 2 cc. glacial acetic acid and 6 cc. of a freshly prepared diphenylamine reagent. The closed end of a smaller tube is then inserted into the test tube and secured in position with a rubber band. The whole is now placed in a vigorously boiling water bath for 10 minutes. The reading of the result is described by the author as follows: "If a strongly purple color is produced and does not need 24 hours to become stable, the reaction is positive. Normal serum produces only a green to a bluish-green color, so that sera yielding similar color to this are graded negative. Sera of patients suffering from conditions other than tuberculosis, have so far been found to yield generally a greenish-blue color but never the purple color indicative of active TB."

The grading of the tuberculosis is based on the intensity of this purple reaction from + to +++++. It is important that the purple reaction should persist as long as 24 hours. Positive results have been obtained in 260 cases of active tuberculosis and negative results in 52 normal controls. Positives have also been obtained in tuberculous guineapigs.

The author emphasizes the importance of using pure glacial acetic acid (Baker) since apparently impure varieties have produced different colours. Treating the acid with a strong oxidizing reagent such as permanganate and redistilling several times is recommended as "somewhat effective" as a measure of purifying the acid. The diphenylamine reagent is prepared by dissolving one gramme of the pure diphenylamine crystals (fresh stock) in 100 cc. glacial acetic acid and adding 2.75 cc. pure concentrated sulphuric acid. It is unstable and should be prepared immediately before use.

YOUMANS, A. S. & YOUMANS, G. P. (1950.) The effect of bovine plasma fractions on the growth of *Mycobacterium tuberculosis* var. *hominis*. —*J. Bact.* 60. 561–568. 1925

The addition of bovine serum to a synthetic medium enhances the growth of tubercle bacilli more markedly than does serum albumin alone. The authors report the effect on the rate of sub-surface growth of the human type virulent strain H37Rv of *M. tuberculosis*, produced by adding bovine serum and 12 bovine plasma fractions to modified Proskauer and Beck synthetic medium. Only one fraction, proantithrombin,

stimulated growth to the same degree as whole serum. The remaining fractions except fibrinogen and the ultrafiltrate enhanced growth to some degree.—W. R. BETT.

YOUMANS, G. P. & YOUMANS, A. S. (1950.) The growth of recently isolated strains of *Mycobacterium tuberculosis* var. *hominis* in liquid media.—*J. Bact.* 60. 569–572. 1926

The 23 strains of *M. tuberculosis* employed were cultures recently isolated from—presumably human—cases of active pulmonary TB. with the exception of one laboratory strain of the virulent human type strain H37Rv. Such strains grow rapidly and uniformly in nutritive or protective liquid media containing serum or proantithrombin. Growth is slower in sorbitan monooleate albumin medium than in the basal medium alone.—W. R. BETT.

EHRlich, R. (1950.) Untersuchung von toten und lebenden Tuberkelbakterien durch Färbefahren. [A staining method for differentiation of living and dead tubercle bacilli.] —*Milchwissenschaft.* 5. 147–148. [English summary.] 1927

A thin film of milk is dried in the air and heat-fixed; stained for 3–5 min. with Loeffler's methylene blue with constant heating; rinsed with flowing water and decolorized with acid alcohol for 30 sec. The alcohol is washed off with water, and the film is counterstained with alkaline fuchsine for 3–5 min., with constant heating, followed by the same after-treatment. Living tubercle bacilli stain blue, dead bacilli red.—W. R. BETT.

LAMONT, H. G. (1947.) Tuberculin testing.—*Vet. Rec.* 59. 407–409. 1928

Various aspects of the intradermal test in cattle are discussed. The desensitization which occurs in some infected cows at the time of parturition is of considerable practical importance and the results of tests made by J. S. Ogg on 50 newly calved cows and on some of their calves are reported. The Stormont Test is described. In this test two injections of tuberculin are made at intervals of seven days. Measurements of the skin thickness are made at the time of the second injection and again 24 hours later. An increase of 5 mm. or more between the two measurements indicates a positive reaction. Results of this test are compared with those of the usual single intradermal test in 300 cows which were examined after slaughter.

—M. C.

ANDRÈS, J. (1950.) Les réactions spécifiques et non spécifiques de la peau lors de la tuberculation intradermique. [Non-specific re-

actions to the intradermal tuberculin test.]
—*Bull. Off. internat. Epiz.* 34. 324-337. 1929

Interpretation of positive or doubtful tuberculin tests in cattle is not always simple. In infection with the bovine type of bacillus comparative tuberculin tests must be done, proceeding from avian type to human type tuberculin. It may sometimes be necessary to exclude, by clinical examination, infection with other acid-fast organisms. Non-specific skin reactions may be confused with doubtful or positive reactions when the intracutaneous method is used. They are rare with the subcutaneous method. Non-specific skin inflammation may be distinguished from a true positive reaction by the absence of other signs of inflammation, and by being superficial.—W. R. BETT.

CORPER, H. J. & COHN, M. L. (1950.) The nature of tuberculin.—*Amer. J. clin. Path.* 20. 603-609. [Authors' summary and conclusions slightly modified.] 1930

Tuberculin (tuberculo-protein), the biologically active and specific constituent of the tubercle bacillus, liberated by autolysis into the nutrient medium following growth at 37° C., can still be found in the remaining nutrient liquid medium in stable form and without apparent loss of biologic activity after more than eight years at 37° C.

In solutions, buffered at pH 7.0, free from preservatives or contamination and in sealed amber glass ampules, tuberculin is biologically stable for over nine years at room or refrigerator temperatures but not at incubator temperature. Dilutions in unbuffered saline solution are not stable.

Heating the natural Seitz filtrate from a two-month-old culture of human type tubercle bacilli at or below pH 6.0 results in a loss of tuberculin. This effect is less appreciable in an eight-year-old culture maintained at 37° C.

It appears that the tubercle bacillus possesses autolytic enzymes capable of producing tuberculin *in vitro* but not capable of carrying the active material beyond the specific biologically active protein stage.

BIGLAND, C. H. (1950.) A report on the isolation of *Listeria* [*Listerella*] organisms from a canary and a chicken in the Province of Alberta.—*Canad. J. comp. Med.* 14. 319-324. [French summary.] 1931

Erysipelothrix (Listeria) monocytogenes was isolated from a canary and from a fowl on separate premises. The canary appeared to have died as a result of a mite infestation, but in the liver there were nodular lesions from which the organism was isolated. In the fowl there was a

generalized infection. No other cases were reported from either premises.—R. GWATKIN.

LINK, V. B. (1950.) Plague epizootic in cottontail rabbits.—*Publ. Hlth. Rep., Wash.* 65. 696. 1932

Following the clinical diagnosis of bubonic plague in a man who had shot and cleaned six cottontail rabbits in New Mexico, U.S.A., a survey of domestic and wild rodents was undertaken. The findings from domestic rodents were entirely negative. Numerous cottontail rabbits and pack rats [wood rats, *Neotoma*] were found dead. Tissues and fleas from two specimens each proved to be plague-infected. In addition, fleas from other pack rats, as well as from pack rat nests and grasshopper mice [*Onychomys*], were positive.

During the previous 15 years that the Communicable Disease Research Center had conducted plague surveys 3,693 fleas from 431 cottontail rabbits and 873 fleas from 337 jack rabbits, had been tested. Two pools of fleas from cottontail rabbits and the tissue of one cottontail rabbit found dead had been positive for plague. All the specimens from jack rabbits had been negative.

This was the first occasion upon which cottontail rabbits had been implicated in an active plague epizootic in the U.S.A.

—ALASTAIR N. WORDEN.

HÄSSIG, A., KARRER, J. & PUSTERLA, F. (1949.) Ueber Pseudotuberkulose beim Menschen. [*Pasteurella pseudotuberculosis* infection in man].—*Schweiz. med. Wschr.* 79. 971-973. [Abst. from abst. in *Bull. Hyg., Lond.* 25. 311. (1950.)] 1933

The authors recorded two cases of *Past. pseudotuberculosis* infection. Details were given of the clinical character of the illness and of the strain of *Past. pseudotuberculosis* isolated from the patients.

NETER, E. & GORZYNSKI, G. A. (1950.) Relative efficacy upon *Pasteurella multocida* of various antibiotics aureomycin, terramycin, bacitracin, and polymyxin B.—*Proc. Soc. exp. Biol., N.Y.* 74. 328-330. [Authors' summary copied verbatim.] 1934

The bacteriostatic activity toward eight strains of *Pasteurella multocida* of aureomycin, terramycin, and bacitracin and the relative efficacy of four additional antibiotics, previously studied only singly, have been determined. It was found that the eight strains were very susceptible to penicillin, aureomycin, chloromycetin, terramycin and polymyxin B but rather resistant to bacitracin and streptomycin.

MEADS, M., HARRIS, C. M., HASLEM, N. M. & CLINE, W. A. (1950.) Chloramphenicol-fastness: development *in vivo* and experimental production *in vitro*.—*J. Clin. Invest.* 29. 1473–1479. [Authors' summary copied *verbatim*.] 1935

Bacterial resistance to chloramphenicol developed in patients during treatment with this drug. Fastness appeared in single or successive small steps. In most instances, it was associated with failure of treatment. Small numbers of organisms exhibiting low degrees of fastness to chloramphenicol were detected in a susceptible strain of *K. pneumoniae*. These bacterial variants had properties that were common to mutants and gave rise to other variants that exhibited higher degrees of drug fastness than the parent organism. These clinical and laboratory observations suggest that chloramphenicol-fast strains are produced by the process of drug selection and successive mutation of rare drug fast variants that exist in otherwise susceptible species of bacteria.

MUDD, S., SMITH, A. G., HILLIER, J. & BEUTNER, E. H. (1950.) Electron and light microscopic studies of bacterial nuclei. III. The nuclear sites in metal-shadowed cells of *Escherichia coli*.—*J. Bact.* 60. 635–639. [Authors' conclusions copied *verbatim*.] 1936

In young cells of *Escherichia coli*, fixed in OsO₄ [osmium tetroxide] vapor and shadowed with chromium, the nuclear sites may appear either as irregularly shaped areas of less electron-scattering power than the surrounding cytoplasm or as depressions over which the cytoplasm has collapsed. Both observations support the conclusion that the nuclear sites are areas of less density (mass per volume) than the enveloping cytoplasm.

HILLIER, J., MUDD, S., SMITH, A. G. & BEUTNER, E. H. (1950.) The "fixation" of electron microscopic specimens by the electron beam. —*J. Bact.* 60. 641–654. [Authors' conclusions copied *verbatim*.] 1937

The pattern of contrast between nuclear sites and cytoplasm seen in electron micrographs of young cells of *Escherichia coli* fixed in osmic acid vapor resembles the pattern of contrast seen in similarly prepared cells in light micrographs, and also resembles the pattern seen with the phase contrast microscope in living cells. The contrast pattern appears unchanged in second and third pictures of the same specimen taken in routine manner with no special precautions against electron bombardment.

After microscopy in the electron microscope, specimens may be subjected without

undergoing change in appearance, to chemical or thermal influences that would profoundly alter the specimen before exposure to electron irradiation. Thus bacterial protoplasm is "fixed" by electron irradiation so that it is refractory to normal hydrochloric acid or to cytolysis by distilled water followed by acid treatment. Colloidion films and embedding media are refractory to their usual solvents and to high temperatures. Organic specimens subjected to the electron irradiation of routine micrography are therefore altered in chemical constitution and properties if not in visual appearance. This chemical alteration has been attributed to the high energy which a single electron can impart to a molecule of a specimen.

TAL, C. & GOEBEL, W. F. (1950.) On the nature of the toxic component of the somatic antigen of *Shigella paradysenteriae* type Z (Flexner).—*J. exp. Med.* 92. 25–34. [Authors' summary copied *verbatim*.] 1938

From the chemical evidence presented it appears that the toxicity associated with the somatic antigen of Type Z *Sh. paradysenteriae* may be attributed to an entity distinct from the known components of the complex. That this substance is neither the protein, the lipid, nor the carbohydrate component of the antigen is evident. Because of its lability to chemical manipulation, the nature of the toxic component has not yet been ascertained.

PERDRIX, J. (1949.) Séro-diagnostic qualitatif de la salmonellose abortive des équidés (agglutinines H et O dissociées). [Serological diagnosis of *S. abortus-equi* infection in horses].—*Rev. Immunol. Thérap. antimicrob.* 13. 287–300. 1939

If separate O and H antigens of *S. abortus-equi* are prepared, it is found that the H agglutinations are highly specific, but not the O agglutinations. Natural O titres in horses are, as a rule, 1 : 50 to 1 : 200; natural H titres are very low or non-existent. After infection or vaccination both H and O titres remain high for some time, even if the animals are not carriers.

—A. MAYR-HARTING.

GORHAM, J. R. & GARNER, F. M. (1951.) The incidence of *Salmonella* infections in dogs and cats in a nonurban area.—*Amer. J. vet. Res.* 12. 35–37. [Authors' summary slightly modified.] 1940

The first isolation from dogs of *Salmonella new brunswick* and of the *arizona* group of the paracol (O14 : H 1, 2, 5) organism is reported. Organisms of the paracol group 29911 were found in the feces of apparently normal dogs and cats and in dogs and cats with diarrhea.

Pseudomonas was isolated in pure culture on enteric plates in 2 fatal cases of hemorrhagic gastroenteritis in dogs. It would appear that members of the genus *Proteus* belong to the normal intestinal flora of the dog.

WERNER, W. & ZÖCKLER, H. (1949.) Epidemiologische Beobachtungen bei einer Paratyphus-B-Milchepidemie. [A paratyphoid B epidemic from milk.]—*Z. Hyg. Infekt. Kr.* 129. 218–232. [Abst. from abst. in *Bull. Hyg., Lond.* 25. 239. (1950). Signed: W. G. SAVAGE.] 1941

The main outbreak of this paratyphoid B infection in Kamberg and district was preceded by a series of sporadic cases (amounting to 30 by June 10) in the spring and early summer of 1947. Then followed an explosive outbreak the same year with about 350 notified cases by July 1. Many additional cases occurred subsequently and on December 1 the number of recognized cases was 685. Of these, over 400 were confirmed by laboratory tests. Actually the main part of the outbreak (635 cases) was over by the middle of September. The remaining 50 later cases were mostly contact infections.

In addition there were many ambulant cases not definitely notified, which brought the total known infections to about 1,000.

The distribution of the cases suggested milk as the vehicle. The central Kamberg dairy supplied milk to 25 villages and the outbreak affected 21 of them. The other four were the smallest villages served, and they had difficult communications. This dairy also sent daily 5,000 litres of milk to Wiesbaden and many cases were notified from that town.

Extensive bacteriological examinations (excreta, urine and blood) of the staff of this dairy (about 25 persons) were negative and so also were investigations of the milk distributors and others handling the milk. On the other hand, living over the garage of the dairy was a woman who had suffered from paratyphoid fever about the beginning of June 1947 and whose blood gave a positive 1 : 400 agglutination. She mixed freely with the dairy staff and used the same sanitary conveniences, which were bad, and had no washing arrangements. It was not ascertained how she became infected, nor could any definite connexion be traced from her to the milk, but it was considered that she was the source of infection. It is left uncertain whether the milk was infected on a single occasion or on more than one occasion. At the dairy the milk was heat-treated at 85° C. for 30 seconds, which is ample to destroy any paratyphoid bacilli, and this practice was found to be operating properly. [Unfortunately no indications are given at what

stage of the outbreak this was checked. No dates of examinations are anywhere stated.]

BLAXLAND, J. D. & BLOWERS, A. J. (1951.) *Salmonella typhimurium* infection in duck eggs as a cause of human food poisoning.—*Vet. Rec.* 63. 56–59. [Authors' summary copied verbatim.] 1942

Nine ducks were obtained from a flock which was suspected of having been the source of *Salm. typhimurium* infection in an outbreak of human food poisoning. Tube agglutination tests were carried out on blood samples from them every week for nine weeks; all eggs laid, and cloacal swabs collected periodically, were examined bacteriologically. At the conclusion of the experiment the ducks were killed and a detailed *post-mortem* and bacteriological examination was conducted on each. *Salm. typhimurium* was isolated from the ovaries and other organs of seven of the nine ducks, from five of the 60 eggs laid by eight of them and also from one faecal swab. These cultures were shown by phage-typing to belong to the same group as the strains isolated from the stools of patients who had suffered from gastro-enteritis thought to be associated with the consumption of eggs from the same flock of ducks. The blood sera of only four of the seven ducks, from which the organism was isolated, agglutinated specific antigen to a titre which would have been regarded as positive at a routine test, seven to 14 days before they were killed.

DALLING, T. (1949.) *Brucellosis in cattle and its control*.—*Proc. XIIth Internat. Dairy Congr., Stockholm*. Sect. I and VI. 510–515. [In English. French summary.] 1943

A general account of brucellosis in cattle.
—L. M. JONES.

VAN DRIMMELEN, G. C. (1949.) *The brucellosis survey in South Africa*.—*J. S. Afr. vet. med.* Ass. 20. 178–188. 1944

Brucella abortus infection in South Africa was first reported in 1913. Although the tube agglutination test has been applied to a large number of blood samples in the last 35 years, an accurate survey of the extent of the infection in the cattle population has not been possible. The bushveld and Bechuanaland regions are believed to be the most severely infected. Positive serum reactions have been found in a limited number of samples from pigs, goats, sheep and equine animals. *Br. abortus* is the species most commonly found. Vaccination of cattle is the main control measure employed. The Veterinary Division of the Department of Agriculture was to proceed with a national anti-brucellosis campaign.—L. M. JONES.

WOOD, R. M. (1950.) *Brucella* ring test antigen prepared by reduction of a tetrazolium salt.—*Science*. 112. 86. 1945

A stained *Brucella* antigen is added to whole milk in the brucella ring test which is coming into use as a rapid method of testing herds of cattle for evidence of brucellosis. Hematoxylin has been used for staining the antigen but W. suggests the use of a tetrazolium salt (4, 4'-bis (3, 5-diphenyl-2-tetrazolinium)-biphenyl dichloride) for more uniform colour intensity, specificity and sensitivity. An aqueous solution of the salt is added to a heavy suspension of living cells in broth to give a final concentration of 1 part in 16,000. The mixture is incubated at 37° C. for four hours to permit the organisms to reduce the compound and thereby become stained. The organisms are then killed by heating to 60° C. for one hour.—L. M. JONES.

JORDAN, W. J. (1950.) *Reproduction in a dairy herd and its relation to vaccination against brucellosis*.—*J. comp. Path.* 60. 34-40. 1946

The reproductive data of a self-contained herd of 100-200 attested Ayrshire cattle over a period of nine years are presented. *Brucella* vaccine prepared from strain 45/20 had been used and did not cause the development of agglutinin titres. It was superseded by strain 19 vaccine. Adults which received strain 19 vaccine developed titres which persisted, but calfhood vaccination produced only transient response. The fertility of the herd was of a high order all the time.—K. G. TOWERS.

GOODLOW, R. J., MIKA, L. A. & BRAUN, W. (1950.) *The effect of metabolites upon growth and variation of Brucella abortus*.—*J. Bact.* 60. 291-300. [Authors' summary copied verbatim.] 1947

The application of paper chromatography to studies of the growth and variation of smooth *Brucella abortus* in Gerhardt and Wilson's synthetic medium revealed a striking correlation between the accumulation of certain amino acids in the medium and the appearance of nonsmooth variants. The role of one of the amino acids, alanine, in favoring the establishment of nonsmooth variants, was verified by the addition of filtrates of old cultures or of alanine alone to freshly inoculated smooth cultures in synthetic medium. Under both conditions, a more rapid and enhanced establishment of nonsmooth variants was observed, and it was found that alanine markedly suppressed the viable count of smooth cells but failed to exhibit a similar marked effect on nonsmooth types. It thus appears that the accumulation of alanine as a metabolite of smooth cells creates an environ-

ment favorable for the establishment of spontaneously occurring nonsmooth variants.

The possible metabolic pathways involved and the relation of these data to general phenomena of population changes have been discussed.

FELSENFIELD, O., YOUNG, V. M., LOEFFLER, E., ISHIHARA, S. J. & SCHROEDER, W. F. (1951.) *A study of the nature of brucellosis in chickens*.—*Amer. J. vet. Res.* 12. 48-54. 1948

Experiments carried out on chickens, three to four weeks old, showed that intramuscular and intraperitoneal injections, as well as feeding of brucella, caused bacteremia, faecal excretion of the organisms, and the appearance of significant serum agglutinin titres. Cross-reactions with *Vibrio cholerae*, *Proteus* OX 19, and *Salmonella pullorum* antigens were also observed. The quantitative response depended more on the infective strain than on the species of brucella. There was some evidence of greater pathogenicity of *Br. melitensis* strains.—H. L. GILMAN.

CARRÈRE, L. & QUATREFAGES, H. (1950.) *L'allergie dans la brucellose. [Allergy in brucellosis]*.—*C. R. Soc. Biol. Paris.* 144. 1314-1315. 1949

An account of reactions in g. pigs to skin tests with melitine after intratesticular injections of heat-killed *Br. melitensis* and in other g. pigs after subcutaneous injections of live culture of a non-pathogenic strain.—W. TATHAM THOMPSON.

NELSON-JONES, A. (1951.) *Neurological complications of undulant fever. The clinical picture*.—*Lancet.* 260. 495-498. [Author's summary slightly modified.] 1950

In obscure neurological illness, and in psychological illness accompanied by recurring low pyrexia, and in all cases of lymphocytic meningitis in adults or in children, brucellosis should be thought of.

The clinical picture of neurobrucellosis is varied, but its special characteristics are: meningo-tropism; liability to late onset, months or years after the septicaemic stage of undulant fever; and a tendency to produce a series of clinical recurrences in varying sites.

A new case is described in which passive and active immunization appeared to be of value.

Although undulant fever is not as common in Great Britain as in the Mediterranean countries, cases due to *Br. abortus* do occur, and sometimes there are neurological complications. (Dixon and Roaf 1946, Leys 1943.) In country districts where raw milk is drunk, routine investigation of cases of neurological and mental illness for brucellosis might reveal evidence of the infection.

WILSON, W. R. & McDIARMID, A. (1950.) The occurrence of *Vibrio fetus* in aborted material derived from cows inoculated with S. 19 Br. *abortus* vaccine.—*Vet. Rec.* 62. 589–591. 1951

During an investigation into the possible causes of abortion in cattle previously vaccinated with *Brucella abortus* strain 19 it was found that *Vibrio fetus* was present in seven of 23 aborted foetuses obtained from 20 herds in Berkshire. The organisms were demonstrated in smears from the stomachs of the foetuses and cultures were obtained from six foetuses. The abortions attributed to *V. fetus* occurred between the fifth and eighth months of pregnancy. Virulent *Br. abortus* strains were detected in three animals from three herds which had a history of brucellosis prior to vaccination.—L. M. JONES.

STOCKTON, J. J. & Newman, J. P. (1950.) The preservation of *Vibrio fetus* by lyophilization.—*Cornell Vet.* 40. 377–379. [Author's summary copied verbatim.] 1952

A detailed method for the preservation of *Vibrio fetus* by drying from the frozen state is given. Eight strains of this organism have remained viable since the original desiccation. In two instances this has been for 681 days. It is believed this is the most convenient method of preserving the viability of this hard-to-maintain organism.

McCLURKIN, A. W. (1950.) *Clostridium* infection in India. [Cattle and buffaloes.]—*J. Amer. vet. med. Ass.* 116. 46–48. 1953

An account of an outbreak of an acute epidemic disease affecting cattle, buffaloes, sheep and goats, manifested by a rapid course and pyrexia. On autopsy, there was swelling of the liver and spleen and some icterus. Organisms morphologically similar to clostridia were present in the blood at death. The author concluded that the precise causative agent of the condition could not be decided without further and extended bacteriological investigation.

—H. PLATT.

HOGARTH, T. W. (1950.) Tetanus in dogs.—*Aust. vet. J.* 26. 338–339. 1954

Clinical reports of two cases of tetanus in dogs are given. One originated in a tonsil infection, the other through the swallowing of a needle which penetrated the lung and eventually emerged through the thoracic wall.

Treatment in both cases was successful, and consisted of the daily administration of 30,000 units of tetanus antitoxin, and 30,000 units of oily or procaine penicillin.—N. WICKHAM.

WENTZEL, L. M., STERNE, M. & POLSON, A. (1950.) High toxicity of pure botulinum Type D toxin. [Correspondence.]—*Nature, Lond.* 166. 739–740. 1955

Methods of preparation and purification of the toxin were given. When diluted in 0.2% gelatin in phosphate buffer at pH 6.2, the toxicity for white mice was 4×10^{12} m.l.d. per mg. protein nitrogen, i.e. 20,000 times that of Type A toxin.—C. MACKENZIE.

HERNANZ, M. (1950.) Paraplegia enzoótica. Encefalomiелitis infecciosa y botulismo de los équidos en España. [Epizootic paraplegia, infectious encephalomyelitis and botulism in horses in Spain.]—*Bol. Inf. Col. Vet. Esp., Supl. cient.* 4. 503–517. 1956

H. believes that these three diseases are really one, botulism, type C. They occur in subacute, acute and peracute forms, and are characterized by a sudden paralysis of the posterior third of the body, with paresis of the penis or tumefaction of the lips of the vulva. In both the subacute and acute forms the patient remains bright and the appetite is usually little affected. In the peracute form, the animal falls and lies in the lateral position, and there is an ascending paralysis which ends in death. Occasionally cattle may also be affected. H. claims to have isolated type C botulinus toxin from the bowel contents of all cases he has observed, and has negated the existence of a virus.

—R. MACGREGOR.

SOMPOLINSKY, D. (1950.) Étude d'une souche de *Plectridium carnis* (Klein) Prevôt isolée d'une enzootie danoise du vison. [*Clostridium carnis* from mink.]—*Ann. Inst. Pasteur.* 79. 204–205. 1957

The principal differential characteristics of the organism are given as:—thermo-resistant (15 min. at 70° C.); foetid odour of cultures; acid and gas production from glucose, fructose, maltose, sucrose, galactose, lactose, mannose, salicin, dextrin; no reduction of nitrates; production of ammonia; traces of sulphuretted hydrogen; volatile amines; acetic, butyric and lactic acids produced. Its pathogenicity is variable but it is sensitive to penicillin and sulphanilamide.—MALCOLM WOODBINE.

DHAYAGUDE, R. G. & PURANDARE, N. M. (1949.) Studies on anaerobic wound infection.—*Indian J. med. Res.* 37. 283–292. [Authors' summary slightly modified.] 1958

Two hundred and ten samples collected from various sources, such as fresh wounds, wounds in surgical wards or autopsy room, were submitted to bacteriological investigation with a

view to isolating anaerobic organisms. Eighty-seven strains of anaerobes were isolated and identified from this material.

The incidence of anaerobes, isolated from fresh wounds, cases of tetanus, and gas gangrene, is discussed in relation to the findings of other workers, taking into consideration the type of wounds studied.

Cl. welchii either alone or in combination with other anaerobes accounted for 52% of the cases of gas gangrene investigated in the present series.

HARMS, H. F. & LANGER, P. H. (1947.) Control of pneumonia in swine with sulfamethazine.—*J. Amer. vet. med. Ass.* **111**. 205–207. 1959

Sulphamethazine, either given in the mash at the rate of 1.5 grammes per lb. body weight the first day and 1 g. per lb. on the second and third day, or given intraperitoneally as a 25% solution of sodium sulphamethazine (1 g. per lb. on three consecutive days), was successful in rapidly curing cases of pneumonia in pigs. A haemophilus-like organism similar to but not identical with *Haemophilus influenzae-suis* was isolated from the pigs and was considered to be causally related to the disease.—R. MARSHALL.

HOWELL, A., Jr., KIPKIE, G. F. & BRUYERE, P. T. (1950.) Studies on experimental histoplasmosis. I. A report on intracerebral inoculations of male dba line 1 mice.—*Publ. Hlth. Rep., Wash.* **65**. 722–735. [Abst. from authors' conclusions.] 1960

It can be concluded that male dba line 1 mice, 4–5 weeks of age, are suitable animals for laboratory study of *Histoplasma capsulatum*. Given sufficient doses, they are uniformly susceptible to the organism, and the time of survival can be regulated by the dosage.

CAMPBELL, C. C. & SASLAW, S. (1950.) Use of mucin in experimental infections of mice with *Histoplasma capsulatum*.—*Proc. Soc. exp. Biol., N.Y.* **73**. 469–472. [Author's summary and conclusions copied verbatim.] 1961

H. capsulatum in the yeast phase when suspended in 5% hog gastric mucin and administered intraperitoneally into white mice caused a high percentage of fatal infections. Equivalent challenge doses of the organism suspended in saline rarely caused death. It was observed that by varying the number of organisms administered in mucin the mortality rate as well as the time interval between injection and death could be altered to suit the experimental requirements.

Certain investigations on experimental histoplasmosis heretofore have been limited by the relative resistance of white mice to infection with

H. capsulatum. "Virulence-enhancement" by mucin offers a means of extending the scope of such studies.

WALKER, J. (1950.) The dermatophytoses of Great Britain. Report of a three years' survey.—*Brit. J. Derm.* **62**. 239–251. 1962

A survey of dermatophytoses covering the greater part of Great Britain and Northern Ireland over a three-year period from June, 1946 to Sept. 1949 showed that of 2,473 strains isolated, approximately 87% were species of *Microsporum* or the small spored *Trichophyton*. The wartime and post-war epidemics of tinea capitis caused by *Microsporum audouini* accounted for a large proportion of the small spore type of infection in England.

Microsporum canis is endemic in certain areas, but infection becomes attenuated by child to child transmission and it will die out after 4–6 transfers in series. Renewal of the infection from an animal host is therefore necessary for the continued propagation of the disease in children, and the existence of an animal reservoir of infection is responsible for persistence of infection in children. Therefore in those areas of South England where it has been shown to be endemic, the control of this infection presents a special problem which calls for the co-operation of the veterinary profession.

In addition to the general increase of indigenous infection the return of large numbers of people from abroad, particularly from war service, has resulted in the introduction of new types especially those concerned in tinea pedis infections. These types when introduced tend to establish themselves and become indigenous.

—JAMES H. HALE.

STANLEY, N. F., (1950.) Biological properties of polysaccharide and lipid fractions from a pathogenic strain of *Aspergillus fumigatus*.—*Aust. J. exp. Biol. med. Sci.* **28**. 99–108. [Author's summary copied verbatim.] 1963

The condition of experimental aspergillosis in laboratory animals is discussed from observations carried out using a strain of *Aspergillus fumigatus* isolated from a penguin. The disease was characterized by a monocytosis, ataxia, adhesions in the peritoneal cavity and tubercle formation. Examination of a crude mycelial extract, a pure polysaccharide and an acetone-ether-soluble lipid revealed that the ataxia and the adhesions could not be reproduced by inoculation with any of these products. On the other hand, it was shown that inoculation with the lipid fraction caused tubercle formation and a monocytosis. The lipid also possessed adjuvant properties. The polysaccharide fraction was

antigenic and of low toxicity. It produced an area of erythema in the skin of immune animals or animals at the later stage of the disease when tubercles and/or adhesions were present.

WRIGHT, L. T. & LOWEN, H. J. (1950.) Aureomycin hydrochloride in actinomycosis.—*J. Amer. med. Ass.* **144**, 21–22. [Abst. from authors' summary.] 1964

A case of *Actinomyces israeli* infection [in a human being] is reported in which aureomycin hydrochloride was used with dramatic results. Six weeks after cessation of therapy there had been no recurrence. No case of actinomycosis treated with aureomycin was found in the literature.

LITTMAN, M. L., PHILLIPS, G. E. & FUSILLO, M. H. (1950.) *In vitro* susceptibility of human pathogenic actinomycetes to chloramphenicol (chloromycetin).—*Amer. J. clin. Path.* **20**, 1076–1078. [Authors' results slightly modified.] 1965

Six strains of *Actinomyces israeli* were inhibited by concentrations of Chloromycetin ranging from 1.0 to 3.0 micrograms/ml. on the basis of subculture endpoint, while their penicillin sensitivities ranged from 0.005 to 0.1 units/ml. *Nocardia farcinica* was inhibited by 20 micrograms/ml. Chloromycetin, while *Nocardia intracellularis*, *Nocardia madurae*, and *Nocardia asteroides* resisted amounts greater than 50 micrograms/ml.

BUTSCH, A. & STÜNZI, H. (1950.) Streptotrichose beim Hund. [Streptothrix infection in dogs].—*Schweiz. Arch. Tierheilk.* **92**, 437–444. [English, French and Italian summaries. Abst. from English summary.] 1966

An account of a case of streptothrichosis in a two-year-old dog; the syndrome was exudative peritonitis, inappetence, fever and broncho-pneumonia. *Post-mortem* there were purulent peritonitis, nodular broncho-pneumonia with inflammation of the pulmonary lymph nodes and chronic pleurisy, together with cirrhosis of the liver and subacute nephritis. A streptothrix organism was present in the bronchial lymph nodes, parietal peritoneum and mesentery.

MAROTEL & PIERRON. (1950.) Une nouvelle maladie du lapin: la saccharomycose. [Saccharomyces guttulatus infection in rabbits].—*Bull. Acad. vét. Fr.* **23**, 162–164. 1967

The faeces of nearly all rabbits contain *Saccharomyces guttulatus*—5–10 per microscopic field, which are considered harmless. Cases are reported in which the presence of this micro-

organism caused fatal disease: 50–80 of the organisms were seen in a microscopic field. There were no visceral lesions, and no micro-organisms in the blood. Four healthy young rabbits, given the faeces of the dead rabbits, mixed with their food, for ten days, all died after 25–30 days in a state of extreme emaciation. No abnormality was found *P.M.*, other than the presence of this organism. For treatment a good purge should suffice to expel most of the parasites, which are free in the intestine.—W. R. BETT.

DURIEUX, C. (1948.) Sur une septicémie provoquée par la morsure d'un sciuride africain *Xerus erythropus* E. Geoff. [On a septicæmia resulting from the bite of *Xerus erythropus* E. Geoff, an African sciurid.].—*Bull. méd. Afr. Occident. Française.* **5**, 239–246. [Abst. in *Bull. Hyg., Lond.* **25**, 311. (1950), copied verbatim. Signed: B. STOCKER.] 1968

Xerus erythropus, the red-footed ground squirrel, in Senegal popularly misnamed "rat-palmiste", is a burrow-making rodent widely distributed in West Africa. In the Dakar region the author knows of five persons bitten by this animal; all became seriously ill and three died. In four cases in which the clinical findings are available, the subjects developed high fever, headache and a generalized eruption after an incubation period of 36 to 48 hours, and in two cases collapse and death followed 36 hours later. The *post-mortem* findings were not striking, but a characteristic organism was recovered by culture and by animal inoculation from the blood in two fatal cases, and this organism was also seen in smears from the organs.

In smears from *post-mortem* material it appeared as a Gram-negative bacillus varying in shape from cocco-bacillary to filamentous; in culture pleomorphism was even greater, growth consisting of tangled chains of bacilli and of club-shaped, spindle-shaped and large round forms. It was non-motile and non-sporing. In blood-broth white opaque lenticular colonies developed in the fibrin layer after 48 hours' incubation: in ascitic serum broth small granular colonies appeared throughout the medium. No growth occurred on solid media incubated aerobically. Mice, guinea pigs, rabbits and monkeys were killed by inoculation of the organism: the *post-mortem* findings are described.

Inoculation of heart blood and of organs of captured ground squirrels did not produce disease in susceptible animals. But mice bitten by captured animals died after four to six days, and the characteristic organism was cultured from their heart blood.

The organism resembles in many respects that known as *Streptobacillus moniliformis* or as *Haverhillia multiformis* [also known as *Actinomyces muris*, the organism causing one variety of rat-bite fever, and also the disease known as Haverhill fever]. It differs in its greater virulence for man and animals, failure to localize in the joints of experimental animals, and failure to grow aerobically on enriched solid media.

The bite of the ground-squirrel is dreaded by the Senegalese: according to their tradition "He who is bitten and sees his blood drop to the ground is doomed to die".

OLEJNIK, E. & SHNEYERSON, S. (1950.) A new strain of *Leptospira* in Israel. [Correspondence.]—*Nature, Lond.* 166. 526. 1969

The authors report the occurrence of a new strain of leptospira which they have incriminated as the agent responsible for a severe outbreak of leptospirosis in man, affecting particularly vegetable growers. The organism is related to, but serologically different from, *L. bovis* and *L. grippo-typhosa*. It is transmitted by voles (*Microtus guentheri*) of which 70% in the area had titres of 1:200 to 1:3000 against *L. bovis*, *L. grippo-typhosa*, and the new strain. The organisms were demonstrable in the kidneys of the voles. Voles captured outside the epidemic area were free from leptospira and anti-leptospira antibodies. Three-week-old mice infected intraperitoneally with cultures of the organism, excreted it in the urine within 2-5 days. Since under these conditions, *L. bovis* and *L. grippo-typhosa* are not thus excreted, this test has been used to differentiate the new strain.—H. PLATT.

JACUSIEL, F. (1949.) [The problem of leptospirosis in Israel.]—*Refuah vet.* 6. 121-124. English summary p. 164. [Abst. from summary.] 1970

Prior to 1945-46, leptospirosis was unrecognized in Israel but the isolation of *Leptospira bovis* from cattle there in 1946 stimulated interest in the disease with the result that human leptospirosis was found to be not infrequent. It was usually caused by *L. bovis* and was contracted from cattle but in a smaller number of cases *L. canicola* and *L. pomona* were the causative organisms, and were derived from dogs and pigs respectively.

In 1949, however, a large outbreak of leptospirosis occurred among the human population, the causative organism of which has not hitherto been classified adequately enough to identify it. The epidemic coincided with a severe plague of small rodents. It was epidemiologically unrelated to bovine leptospirosis.—H. PLATT.

FIELD, H. I. & SELLERS, K. C. (1950.) *Leptospira icterohaemorrhagiae* infection in the calf. —*Vet. Rec.* 62. 311-313. 1971

The technique is described in detail whereby *L. icterohaemorrhagiae* was isolated and identified from a calf which died after developing severe jaundice. Rats infected with the same organism were found on the farm and there was a history of previous similar deaths among calves. Six calves were infected experimentally and the symptoms, P.M. findings and serological reactions are recorded. The similarity of the disease to that produced by *Leptospira* spp. in other animals is discussed and the importance of a serological survey of farm animals is stressed.

—K. G. TOWERS.

FIELD, H. I. & SELLERS, K. C. (1951.) *Leptospira icterohaemorrhagiae* infection in piglets. —*Vet. Rec.* 63. 78-81. [Authors' summary copied verbatim.] 1972

An outbreak is recorded of jaundice in a litter of one month old piglets. Of four affected piglets developing jaundice, one died and three recovered. The causal organism was found to be *L. icterohaemorrhagiae*. Two piglets infected experimentally developed jaundice on the fifth and sixth day respectively which persisted until the ninth day and then quickly disappeared. It was shown that the piglets were still carrying the organism when destroyed on the 20th day after infection.

Attention is drawn to the fact that infection of pigs with another species of *Leptospira*, *L. pomona*, is common in Europe, Australia, the Dutch East Indies and the Argentine. The symptoms produced in pigs by infection with this organism are described briefly.

NEWMAN, J. P. (1950.) Studies of canine leptospirosis. I. Evaluation of laboratory diagnostic procedures. II. Serologic determination of the incidence of latent infection in the Lansing, Michigan area.—*Amer. J. vet. Res.* 11. 405-411. [Abst. from author's summary.] 1973

In tests on blood and urine collected from 30 naturally infected dogs, staining and cultural procedures were found to be unreliable diagnostic methods. The agglutination test was approximately 50% accurate after the second week of illness and 100% accurate after the third to fourth week.

In agglutination tests on serum from 500 normal dogs there was some titre to either *Leptospira canicola* or *L. icterohaemorrhagiae* in 29.6%, 26.2% were positive to *L. canicola*, 2.6% to *L. icterohaemorrhagiae* and 0.8% yielded an equal titre to both. The incidence of latent infection was approximately two males

to one female. The incidence of the infection increased with the age of the dogs.

Nearly one third of the dogs in the Lansing area are possible reservoirs of leptospira infection.

MEHLS, H. J. (1949.) Die Leptospirose des Hundes und ihre Behandlung. [Treatment of leptospirosis in dogs.]—*Tierärztl. Umsch.* 4. 57-62. 1974

In the autumn of 1948 the incidence of leptospirosis in dogs, mainly *L. canicola* infection, was high in Munich and appeared to be spread by the urine of infected dogs. Penicillin injections were found to be fairly useful.—R. ROSS-RAHTE.

OTTOSEN, H. E. (1946.) Om vaccination mod leptospirose hos hund. [Vaccination against leptospirosis in dogs.]—*Medlemsbl. danske Dyrlægeforen.* 29. No. 8. pp. 1-8. [Abst. from English summary.] 1975

A report is given on the use on about 2,000 dogs of a formalized vaccine against leptospirosis. One to two weeks after vaccination a subcutaneous injection of 1 ml. of a living avirulent culture was given to test the immunity. All except two of these dogs withstood the test.

HOPFENGÄRTNER, M. (1950.) Betrachtungen über Canicolasfieber des Menschen und die Canicolasinfektion des Hundes. [Leptospira canicola infection in man and dog.]—*Tierärztl. Umsch.* 5. 13-18. 1976

A general article devoted to *L. canicola* infection in man and in dogs as seen in Germany. The methods of diagnosis, treatment and prevention of the disease are discussed in relation to public health control measures.—H. PLATT.

WEGENER, F. (1949.) Über Canicolasfieber in Unterfranken. [Canicola fever in Lower Franconia.]—*Dtsch. med. Wschr.* 74. 1227-1229. 1977

Details are given of five cases of *Leptospira canicola* infection in man in Lower Franconia, believed to have originated from contact with infected dogs. Definite proof was not obtained because the dogs died before the patients were admitted to hospital.—E. G.

ROLLE, M. & KALICH, J. (1950.) Antagonismus und Virulenzsteigerung der verschiedenen Leptospira-Arten und deren praktische Bedeutung. [Antagonism and enhancement of virulence of different species of *Leptospira*.]—*Berl. Münch. tierärztl. Wschr.* No. 10. pp. 213-216. 1978

The growth of *L. canicola* *in vitro* was found to be greatly enhanced by the addition to the medium of serum from a sheep which had been

previously infected with *L. grippotyphosa*. Similarly, the growth of *L. grippotyphosa* was enhanced by the addition of serum from *L. canicola* injected sheep. In *in vivo* experiments, using nine hamsters infected with *L. grippotyphosa*, treatment of three animals with *L. canicola* serum, resulted in the death of all three, while three hamsters of the group which received *L. grippotyphosa* serum and three which were untreated, survived. The importance of these findings is emphasized in relation to the treatment of the leptospires with monovalent sera. To avoid the possibility of activating a latent infection by one species of leptospira by serum treatment directed against another, it is suggested that only polyvalent sera should be employed.

—H. PLATT.

MORNET, P., ORUE, J. & DIAGNE, L. (1949.) Etude du phénomène de Willems dans la péripneumonie bovine. [A study of the local reaction in cattle to subcutaneous inoculation of fluid from the lungs of cattle with bovine contagious pleuro-pneumonia.]—*Bull. Serv. Elev. Industr. anim. A.O.F.* 2. Nos. 2-3. pp. 7-13. 1979

A general account of the results of inoculating cattle subcutaneously with liquid from the lung of a beast with bovine contagious pleuro-pneumonia.—W. R. BETT.

NELSON, J. B. (1950.) The relation of pleuro-pneumonia-like organisms to the conjunctival changes occurring in mice of the Princeton strain.—*J. exp. Med.* 92. 431-439. [Author's summary copied *verbatim*.] 1980

A selected colony free from ocular infection with pleuropneumonia-like organisms of the conjunctival type was developed from young Princeton mice delivered by cesarean section and reared by uninfected Swiss foster mothers. Young mice from this colony continued to show sporadic ocular manifestations similar to those observed in infected mice. This reaction was non-inflammatory in nature. The organisms previously recovered from the altered conjunctivae of Princeton mice were established on the conjunctivae of selected mice of the special colony both by direct contact and by the local implantation of ocular washings and concentrated cultures. The factors associated with the conjunctival reaction in infected Princeton mice are discussed.

LAMANNA, C. & MALLETT, M. F. (1950.) The relation of the Gram stain to the cell wall and the ribonucleic acid content of the cell.—*J. Bact.* 60. 499-505. [Authors' summary modified.] 1981

By combining the Gram stain and the cell-wall-staining technique of Dyar, it was shown that the cellular substrate responsible for the Gram reaction is partly located in the cell walls of vegetative cells. In the case of the bacterial endospore and yeast ascospore, the cell wall is free from Gram-staining material even when the interior of the spore stains Gram-positive.

Not all the ribonucleic acid of yeast cells is associated with the Gram reaction. By shaking normal yeast cells with chloroform it is possible to extract nucleic acid without loss of the Gram reaction. This raises a question as to the chemical similarity of the ribonucleic acids of the Gram-positive cell.

KREČEK, J., STERZL, J., KREČKOVÁ, J. & VAICEN-BACHER, V. (1950.) Vliv antihistaminových látek na dekarboxylaci histidinu bakteriemi. Studie o mechanismu účinku antihistaminových látek. I. [The effect of antihistamines on bacterial decarboxylation of histidine.]—*Čas. Lék. čes.* 89. 2–6. [English summary.] [Abst. in *Bull. Hyg., Lond.* 25. 730. (1950), copied verbatim. Signed J. BAUER.] 1982

Bacteria were grown in a synthetic medium which contained histidine as the only source of carbon, and the occurrence of decarboxylation

was detected manometrically; in this way strains of bacteria possessing histidine decarboxylase were picked out for use in further experiments. Histamine was formed thus from histidine only under aerobic conditions. In similar experiments it was found that growth did not take place when histamine was the sole source of carbon. When antihistamines (Neoantergan and Spofa III) were added to the histidine medium in a concentration of 1/500, growth of the bacteria was inhibited, but still occurred with a concentration of 1/5,000. Decarboxylation was not suppressed, but the disappearance of histidine and formation of histamine were both reduced. When the organisms were grown in a medium containing glucose in place of histidine a similar effect was observed, together with a marked fall of pH caused by the accumulation of pyruvic acid. A comparison of the two series of experiments showed that inhibition by antihistamines was not greater in the medium containing histidine, showing that they have no specific inhibitory effect on histidine decarboxylase, but act instead on the carbohydrate cycle and cause the accumulation of pyruvic acid. It was also noticed that the bacteriostatic effect of the antihistamines was lost in cultures which produced pyocyanin.

See also absts. 2045 (aluminium gel in swine erysipelas and blackleg vaccines); 2088 (*Leptospira* agglutination and lysis in periodic ophthalmia); 2092 (bacterial flora of genitalia of bulls); 2097 (streptococci and canine hysteria); 2121 (serum bactericidal factor); 2131 (bactericidal property of cationic detergents); 2141–2142 (ruminal flora); 2160 (serological diagnosis of *Salmonella* in meat); 2161 (viability of tubercle bacilli in cheese); 2163 (bacterial content of water); 2180 (preservation of *M. tuberculosis* cultures); 2182 (diagnosis of mastitis); 2183 (fungicides against *Trichophyton*); 2184 (*S. typhi* O); 2185 (fluorescence microscopy of tubercle bacilli); 2197 (report, Canada); 2198 (report, St. Kitts-Nevis); 2201 (report, Sierra Leone); 2203–2204 (report, U.S.A.); 2205 (report, Yugoslavia); 2206–2208 (textbooks, bacteriology).

DISEASES CAUSED BY PROTOZOAN PARASITES

HAIG, D. A. & LUND, A. S. 1948. Transmission of the South African strain of dourine to laboratory animals.—*Onderstepoort J. vet. Sci.* 23. 59–61. 1983

Heavy infections in equine animals were induced by serial passage of infected blood by the intravenous route. Infected plasma thus obtained was injected into the testis and scrotal cavity of a rabbit. Two weeks later aspirated fluid from the scrotum was rich in trypanosomes. 0.2 ml. of this fluid was injected into the scrotal cavity of another rabbit and in this way the strain was passaged 50 times. In these infected rabbits trypanosomes were frequently found in the peritoneal cavity, but fresh rabbits could not be infected with these organisms, although on rare occasions very small numbers of parasites were found in the blood.

In the blood of a dog injected intraperitoneally with minced rabbit testis a few trypanosomes were demonstrated nine days later. The parasites persisted for as long as three months,

but the infection could not be maintained by passage of infected blood.

In splenectomized white rats inoculated with 3 ml. of infected dog's blood, a few trypanosomes were found in the blood and the infection was maintained through two further passages. Following this observation a splenectomized rat was injected intraperitoneally with 5 ml. donkey plasma containing 40–50 trypanosomes per ml. Thirteen days later a large number of trypanosomes were found in the blood. Four other splenectomized rats were then subinoculated from the infected one. In each case the rats were injected one hour after the operation. Trypanosomes were numerous in the blood four days later and the strain was passaged six times in splenectomized rats after which normal rats could be infected. These developed maximum infection on the fourth day, after which the parasites rapidly disappeared. After the 20th generation in normal rats occasional deaths occurred and after a further 20 passages almost

all the rats died in four or five days. The strain was transferred from rats to mice and maintained for 50 passages in the latter animals, which died after two or three days. G. pigs injected intraperitoneally and rabbits injected intravenously were refractory to the infection.

The South African rat-passaged strain was compared by the complement-fixation test with antigens prepared from an imported strain. Identical results were obtained. Both the rabbit-testis and rat adapted parasites were indistinguishable morphologically from the original strain.—L. P. JOYNER.

MANSJOER, M. (1948.) Proeven over de werking van trypaflavine bij surra. [Tests of the action of trypaflavine in surra.]—*Ned.-ind. Bl. Diergeneesk.* 55. 417-424. [Abst. from English summary.] 1984

The action of very high dosages of trypaflavine was studied on five horses with surra. Although the parasites disappeared from the blood, there was always a relapse. The drug is not effective in controlling this disease.

TORRICO, R. A. M. (1950.) Conocimientos actuales sobre la epidemiología de la enfermedad de Chagas en Bolivia. [Epidemiology of *Trypanosoma cruzi* infection (Chagas' disease) in Bolivia.]—*Bol. Ofic. sanit. panamericana.* 29. 827-840. [English summary & conclusions copied verbatim.] 1985

The writer reviewed present knowledge of the epidemiology of Chagas' disease in Bolivia and reported new places where *Triatoma* vectors, vertebrate reservoirs and acute and chronic cases of the disease have been found. The geographical distribution of the various zones studied is given in a map.

Eight species of triatomid bugs are found in Bolivia: *T. infestans*, *Eutriatoma sordida*, *P. geniculatus*, *E. oswaldoi*, *E. venosa*, *R. pictipes*, *P. coreodes* and *E. mucronates*. *T. infestans* is the principal and most important vector because of its high infection index, its prevalence and wide distribution in all the different climates from the cold highlands to the tropical climate of the eastern lowlands, with a marked predominance in the valleys, where it is present in all the houses. The domestic species *E. sordida* with a high rate of infection (100% in some places) is also an important vector, but has a limited distribution.

Of g. pigs, dogs and cats, the only known animal reservoirs for *T. cruzi* in Bolivia, g. pigs are the most important, because they abound in every household and in all the peasant-owned ranches, living in close contact with human beings.

The epidemiological data on 211 cases of Chagas' disease, 28 diagnosed by blood examination and 183 by xenodiagnosis, indicate that this disease is widely distributed, but its exact extension has not yet been defined.

COOKSON, L. O. C. (1947.) The serum-formalin reaction in *Trypanosoma rhodesiense* sleeping sickness.—*J. trop. Med. (Hyg.)* 50. 134-140. [Abst. from author's summary.] 1986

C. discussed the serum-formalin reaction in human sleeping sickness and explained the technique of the test. He examined and tabulated the reactions of a group of 70 young adult recruits for the Northern Rhodesia Regiment from "tsetse-free" areas, those of a similar group of 15 from tsetse-fly areas and those of a group of 11 with morbid conditions and discussed the inferences to be drawn from the results obtained. He also tested a group of 18 known sleeping-sickness cases and tabulated and discussed the reactions.

Eight cases in which the test was of value were discussed, and an argument was advanced as to the value of the test especially in doubtful cases and for the investigator working under primitive conditions amongst a suspect population.

GOODWIN, L. G. & WALLS, L. P. (1950.) Antrycide and dimidium. [Correspondence.]—*Trans. R. Soc. trop. Med. Hyg.* 44. 233-236. 1987

The authors discussed the treatment of *Trypanosoma congolense* and *T. vivax* with phenanthridine derivatives, dimidium bromide and phenidium chloride in comparison with treatment with antrycide, [see also Curd and Davey *V.B.* 21. 284] and formed a different conclusion, viz. that when tested against two strains of *T. congolense*, dimidium bromide appeared to be a little more active than antrycide methylsulphate, both by subcutaneous and intraperitoneal injection; these strains were, however, different from the one used by Davy, and this may account for the discrepancy.

There is little to choose between the curative powers of the drugs. Antrycide methylsulphate is about three times as toxic as dimidium bromide administered subcutaneously. The local necrotic action of the two drugs, photosensitization and liver damage and the influence of certain similarities in the structure of the molecule on their toxicity and mode of action are discussed.—E. M. J.

TOBBACK, L. (1950.) Expérimentation de l'antrycide au Congo belge. Trypanosomiases bovines. [Trials with antrycide in the Belgian

Congo.]—Bull. Off. internat. Epiz. 34. 157–171. 1988

Preliminary results of tests of the trypanocidal action of antrycide, carried out on cattle in various districts of the Belgian Congo, are reported. The drug is considered to be effective against *Trypanosoma congolense*, but its action on *T. vivax* appears to be less definite.

—J. M. JACOBS.

ROLLO, I. M. & WILLIAMSON, J. (1951.) Acquired resistance to 'melarsen' trypanosamide and amidines in pathogenic trypanosomes after treatment with 'melarsen' alone. [Correspondence.]—Nature, Lond. 167. 147–148. 1989

Male white mice weighing 16–26 g. infected with *Trypanosoma rhodesiense* were given intraperitoneally 0.6 mg. per 20 g. 'melarsen' (disodium *p*-melaminylphenylarsonate), the minimum effective dose, 48 hours later. Passage of the relapse strain was followed by further treatment, and repetition of this procedure with increasing dosages produced, in 30 passages, a strain completely resistant to the maximum tolerated dose of 'melarsen', viz., 6.8 mg. per 20 g. body-weight. In cross-resistance tests this 'melarsen'-resistant strain was also completely resistant to the maximum tolerated dose of certain trypanocides including aliphatic diamidines, diguanidines and diaminoacridines, partially resistant to an aromatic diamidine, but not resistant to 'suramin' or to 'butarsen' [sodium γ -(*p*-arsenosophenyl) butyrate]. The 'melarsen'-resistant trypanosomes may have lost selective permeability to, or preliminary adsorption affinity for, certain structural groups in the molecule of these respective trypanocides.

—J. M. JACOBS.

BARTLETT, D. E. & DIKMANS, G. (1949.) Field studies on bovine venereal trichomoniasis. Effects on herds and efficacy of certain practices in control.—Amer. J. vet. Res. 10. 30–39. 1990

Details from two herds are presented showing reproductive records during an outbreak of trichomoniasis, during treatment, and subsequent to treatment. The efficacy of the remedial measures is judged by such factors as the increase in calf crop, in the conception rate, and decrease in interval between first service and initiation of pregnancy.

Details of a specific breeding programme to eliminate trichomoniasis are given. This consists essentially of artificial insemination and post-partum rest. The programme was successful in eight of nine infected herds.

—GEORGE M. URQUHART.

FLORENT, A. (1947.) Essai de quelques anti-septiques sur "Trichomonas foetus". [Antiseptics in Trichomonas foetus infection.]—Parasitica. 3. 116–125. 1991

In tests on a number of substances used as trichomonocides, of those derived from acridine, acriflavine was ineffective, rivanol was effective; but the most active substance of those tested was phenyl mercuric nitrate.—JAS. G. O'SULLIVAN.

RIGDON, R. H., MICKS, D. W. & BRESLIN, D. (1950.) Effect of phenylhydrazine hydrochloride on Plasmodium knowlesi infection in the monkey.—Amer. J. Hyg. 52. 308–322. [Authors' summary copied verbatim.] 1992

Monkeys infected with *Plasmodium knowlesi* have been treated by the oral administration of phenylhydrazine hydrochloride. This drug controls the acute phase of the infection. Recurrences do occur; however, it has not been necessary to treat any monkey with a recurrence and, furthermore, no monkey has died from malaria following the acute phase of the infection. Some of the monkeys did not develop an infection following splenectomy. This would suggest that some of the monkeys were cured by this drug. The mechanism of the action of phenylhydrazine on *P. knowlesi* is discussed. The degenerative changes which occur in the parasites are described. Only one monkey in the group of 25 apparently died as the direct result of the phenylhydrazine. The therapeutic dose to control *P. knowlesi* infection is very small when compared to the total amount that may be given to a monkey.

SPLITTER, E. J. (1950.) Theileria mutans associated with bovine anaplasmosis in the United States.—J. Amer. vet. med. Ass. 117. 134–135. 1993

In the course of studies on bovine anaplasmosis a piroplasma-like organism was detected in the erythrocytes of a splenectomized calf which had been injected 12 days earlier with blood from an animal believed to be a carrier of anaplasmosis. The latter infection did not develop in the new host and an uncomplicated strain of the new organism, identified as *Theileria mutans* was thus established.

Transmission could be effected by intravenous injection of citrated infected blood, the incubation period being 12–28 days. In splenectomized calves symptoms of mild fever, anaemia and anorexia were produced, but they were of short duration and recovery was rapid. The *Theileria* persisted in the blood for periods up to eight months, and maximum erythrocyte infections of 5–8% were noted. Unoperated cattle

sustained only low intensity infections and no evidence of pathogenicity was observed.

It is noted that *Th. mutans* is transmitted by Ixodidae which may also transmit *Th. annulata* which is pathogenic. The introduction of carriers of *Th. annulata* among imported cattle would probably result in the spread of this pathogenic *Theileria* in the U.S.A.—L. P. JOYNER.

PIEKARSKI, G. 1950. Zur Parasitologie und Serologie der Toxoplasmosis. [Toxoplasmosis.]—*Zbl. Bakt. I. (Orig.)* 155. 375–383. 1994

P. reported a fatal case of toxoplasmosis in a child, and discussed the present knowledge of the condition. He recorded the results of the so-called colour test of Sabin and Feldmann [V.B. 19. 409] on both infants and adults. A series of serological tests was made to determine the specificity of the reaction and the frequency of positive reactions in a random sample of the population and to carry out further research amongst the members of an infected family.

In discussion on the paper the serological aspects of toxoplasmosis were the main theme.

—M. L. CLARKE.

COWEN, D. & WOLF, A. (1950.) Experimental congenital toxoplasmosis. I. The vagina as a portal of entry of *Toxoplasma* in the mouse. II. Transmission of toxoplasmosis to the placenta and fetus following vaginal infection in the pregnant mouse. III. Toxoplasmosis in the offspring of mice infected by the vaginal route. Incidence and manifestations of the disease.—*J. exp. Med.* 92. 393–402; 403–415; & 417–429. [Authors' summaries copied verbatim.] 1995

I. Toxoplasmosis can be transmitted to mice by the introduction of *Toxoplasma* into the vagina. Pregnant mice were more susceptible to infection than non-pregnant animals in the ratio of 3 to 1. Obvious signs of vaginitis were not observed. Many of the infected mice remained entirely free of external signs, while a minority showed neurological or respiratory disturbances. Pregnant animals, especially those infected 6 to 10 days following conception, often died in the terminal stages of pregnancy or shortly after parturition. The possibility that the vagina may serve as one of the portals of entry to *Toxoplasma* in the human being and that infection may occur by sexual contact or by contamination by feces or other *Toxoplasma*-containing material is discussed. The high susceptibility of the pregnant mouse to toxoplasmosis under the conditions of these experiments suggests a possible explanation for the higher incidence of congenital as compared to

postnatal human toxoplasmosis and for the associated asymptomatic maternal infection. The infected but clinically normal human mothers may be compared to some vaginally infected pregnant mice which remained symptom-free.

II. Pregnant mice infected with *Toxoplasma* by the vaginal route have been found to transmit toxoplasmosis to the placentas and fetuses *in utero*. The microorganism entered the blood stream of the mother from primary foci of infection in the vaginal wall and produced disseminated lesions in the labyrinth of the allantoic placenta at the same time as other peripheral maternal tissues were involved. Placental lesions were observed in mice infected with *Toxoplasma* by vagina between the 3rd and the 9th day of pregnancy. They consisted of microscopic foci of degeneration, without inflammation, in the syncytial trophoblast, and parasites undergoing multiplication were readily identified in them. Here *Toxoplasma* gained access to the fetal circulation. Following the vaginal instillation of *Toxoplasma* on the 8th day of pregnancy, sub-inoculation of test animals revealed the parasites in the maternal peripheral and placental blood on the 13th day and later, while the first histopathologic changes in the placenta were found on the 17th day. *Toxoplasma* could be demonstrated in suspensions of fetal tissues on and after the 17th day by the injection of normal test animals. However, no lesions of toxoplasmosis, or *Toxoplasma*, were found in histologic sections of fetuses 11 to 21 days old removed at autopsy from vaginally infected mothers. It is concluded that before birth the parasites were confined to the fetal blood. The experiments provide the first direct histological demonstration of placental toxoplasmosis. The possible bearing of the experimental disease on human placental and fetal toxoplasmosis is briefly considered. It is probable that a maternal parasitemia during the latter part of pregnancy, whatever the portal of entry may be, is an essential factor in the pathogenesis of human congenital toxoplasmosis and that this occurs shortly after exposure to *Toxoplasma* rather than in a later chronic stage of the infection. The suggestion is offered that some instances of spontaneous abortion or fetal death in man, as in the mouse, may be due to inapparent toxoplasmosis.

III. A study has been made of congenital toxoplasmosis in the offspring of mice infected with *Toxoplasma* by the vaginal route during pregnancy. Some of the young mice were retarded in postnatal development, and some became ill or died in the 2nd to 4th weeks of life while the majority remained symptom-free in spite of the presence of toxoplasmic lesions of

varying degrees of severity. Congenital toxoplasmosis developed only in offspring whose mothers had been infected on the 7th to 9th day of pregnancy. Infection of the offspring without active toxoplasmosis in the mother was not observed. The highest incidence of congenital infection (57.6 per cent) was obtained by giving 2 vaginal instillations of *Toxoplasma*-infected mouse brain on the 8th and 9th days of pregnancy. Mice infected before the 7th day developed placental toxoplasmosis but rarely delivered viable young. When the mother was infected after the 9th day, the offspring were normal. When congenital toxoplasmosis occurred in a litter, a majority or all of the individual offspring were usually infected. Although pathologic changes were not present in the suckling mice at birth, and did not appear before the 9th post-natal day, reasons are stated for excluding the possibility of postnatal or milk-borne infection. It cannot be assumed from the experimental disease that the vagina is a portal of entry of *Toxoplasma* in human congenital toxoplasmosis. Any route of infection leading to a maternal parasitemia during pregnancy might result in toxoplasmosis of the placenta and transmission of the disease to the offspring before birth. Unlike the restricted time interval effective in the mouse, there is a long period during the later months of pregnancy in the human being in which transplacental passage of the infection may occur. When transmission to the fetus takes place shortly before parturition, evidence of disease in the human infant, as in the mouse, may not become manifest until several weeks postpartum, and the prenatal origin of the infection may not be apparent. When the fetus becomes infected well before parturition, symptoms of congenital toxoplasmosis may be present at birth. The asymptomatic character of the infection in many of the young mice would appear to have a counterpart in certain instances of human congenital toxoplasmosis.

SPLITTER, E. J. & WILLIAMSON, R. L. (1950.) *Eperythrozoonosis in swine. A preliminary report.*—*J. Amer. vet. med. Ass.* **116**. 360–364. [8 refs.] 1996

See also absts. 2097 (coccidia and canine hysteria); 2199 (report, Uganda); 2200 (report, East Africa); 2201 (report, Sierra Leone); 2203 (report, U.S.A.); 2205 (report, Yugoslavia); 2209 (book, protozoology and entomology).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

GIRARD, H. & MACKOWIAK, C. (1950.) Le virus O Normandie. [The Normandy strain of foot and mouth disease virus.]—*Bull. Off. internat. Epiz.* **33**. Nos. 9–10. 477–493. 1998
An immunity breakdown was studied in the

An ictero-anaemic disease of growing pigs in the mid-western U.S.A. was first described by Kinsley in 1932 together with a protozoan-like body in the blood. It is now claimed that the causative organism is a blood parasite related to *Anaplasma*. The authors investigated three outbreaks. The organism has been seen in apparently normal pigs; experimental reproduction of the disease is being attempted.

—K. G. TOWERS.

SPLITTER, E. J. (1950.) *Eperythrozoon suis*, the etiologic agent of ictero-anemia or an anaplasmosis-like disease in swine.—*Amer. J. vet. Res.* **11**. 324–330. [Author's summary modified.] 1997

A new species of a blood parasite, identified as *Eperythrozoon suis*, has been observed [see *V.B.* **21**. 67, and preceding abst.] in nine field outbreaks of an acute ictero-anemic condition in swine. The disease has been reproduced in susceptible splenectomized swine by the inoculation of infective blood. The resulting symptoms, disease process, and pathology have been identical to field cases.

A characteristic course of the disease has been noted in both field and experimental cases: a severe parasitic attack, in which symptoms of fever, depression, and anorexia are present.

Severe and rapid blood destruction quickly follows, and the parasites spontaneously become reduced in numbers. The animal exhibits a lowered temperature, pale and icteric mucous membranes, marked weakness, and constipated, bile-stained feces at the onset of acute anemia.

The severity of the disease is dependent upon the intensity and duration of the parasitic attack. It has been indicated that the majority of young swine in endemic areas undergo infection, and usually are unaffected by the mild attack that results. All infected animals probably remain permanent carriers. The exact mode of transmission is unknown, but is presumed to be by insect vectors.

An apparently nonpathogenic blood parasite, designated as *Eperythrozoon parvum*, has been observed in these experimental studies. The organism is a common parasite of swine in Kansas.

Gacé district of Normandy. The virus was shown to be an O variant. The epidemic was confined to a well-defined area and breakdowns occurred 13 days after vaccination; 6–8% of vaccinated animals became ill, whilst herd break-

down varied from 2–80%. Serological studies revealed no differentiation from standard O virus. In g. pigs, vaccine from O Lyon protected against O Normandy, but O Normandy vaccine did not protect against the O Lyon virus. On the other hand in cattle O Lyon vaccine afforded partial protection against O Normandy, whilst O Normandy vaccine protected against both viruses. Experience with this variant supports the Danish and Swiss views that a stock vaccine from a standard strain of high antigenic value is sufficient to block an outbreak despite possible local breakdowns. Vaccination with the virus strain involved in an outbreak is not desirable until the properties of the virus are defined. There exist strains of poor antigenic value which protect only partially against themselves. This factor does not run parallel with virulence. Thus, O Lyon is more virulent than O Normandy for cattle, but its antigenic character is of lower value.—G. V. LAUGIER.

THIERY, J. P. (1950.) Essais de conservation du vaccin antiaphteux à différentes températures. [Storage of foot and mouth disease vaccine at different temperatures.]—*Bull. Off. internat. Epiz.* 33. 474–476. 1999

T.'s. experiments point to the possibility of keeping F. & M. disease vaccines without loss of efficacy at temperatures higher than refrigerator temperature if glycerin is added.

—A. MAYR-HARTING.

ALTARA, I. 1948. Su alcuni focolai di malattia di Aujeszky in Piemonte. [Outbreaks of Aujeszky's disease in Italy.]—*Atti. Soc. ital. Sci. vet.* 2. pp. 61–72. [English and French summaries.] 2000

The author described five small outbreaks of Aujeszky's disease on dairy farms in a small area of south-west Piedmont between 1943 and 1947, affecting pigs, cattle, a cat and a dog. He succeeded in transmitting the infection to rabbits and dogs but in order to do so it was necessary to use a suspension of blood, lung and brain tissue and also of material from the pruriginous lesion of the infected animal.—K. SLAVIN.

BARSKI, G. & MAURIN, J. (1950.) Inclusions négroformes en culture de tissu nerveux en l'absence du virus rabique. [Negriiform inclusion bodies in nervous tissue cultures in the absence of rabies virus.]—*Ann. Inst. Pasteur.* 78. 411–414. 2001

In attempts to reproduce Negri bodies in embryonic nervous tissue cultures of mice, the authors used 15–18-day-old embryos and fowl plasma was found to be the most favourable medium. Tissue cultures were infected with

street virus and Negriiform bodies were observed after the sixth day. Similar bodies were also observed in the control tissue cultures. Further study showed that they never appeared in cultures of chick embryo nervous tissue. They were observed only in cultures where neuro-epithelial tissue formation was well established. They were equally found in cultures from which all extraneous elements had been removed. The presence of these bodies could not be demonstrated in cultures of mouse nervous tissue in a base of rabbit or mouse plasma. It was concluded that the bodies observed were the result of tissue culture on a heterologous medium.

—G. V. LAUGIER.

I. DELVILLE, J. P. & JEZIERSKI, A. (1950.) Isolement à partir d'un cerveau de chien d'un virus neurotrophe pathogène pour de nombreuses espèces animales. [A virus isolated from the brain of a dog which is highly pathogenic for many species of animals.]—*Ann. Soc. belge Méd. trop.* 30. 405–409. 2002

II. JEZIERSKI, A. & DELVILLE, J. P. (1950.) Sensibilité de divers animaux à un virus neurotrophe isolé des selles d'un enfant présumé atteint de poliomyélite. [Susceptibility of various species of animals to a neurotropic virus isolated from the faeces of a child with poliomyelitis.]—*Ibid.* 479–482. 2003

III. JEZIERSKI, A. & DELVILLE, J. P. (1950.) Isolement chez le porc d'un virus neurotrophe pathogène pour de nombreuses espèces animales. [Isolation from a pig of a neurotropic virus pathogenic for many species of animals.]—*Ibid.* 483–486. 2004

I, II & III. In these three papers the authors describe the isolation of strains of what would appear to be the same virus from a dog, the stool of a child and from an outbreak of disease associated with nervous symptoms in pigs. All the sources were in the vicinity of Elizabethville.

The dog had nervous symptoms differing from those of rabies, trembling of the head without paralysis of the jaw, a peculiar gait and ataxia. At first the animal was fully conscious, came when called and ate normally. Within a few hours, however, paralysis developed and the animal died.

Stools of the child were taken on the ninth day of illness. The child was suffering from a flaccid paralysis of the soft palate and poliomyelitis was suspected. A suspension filtered through a Seitz E K pad was used as inoculum.

The outbreak in pigs was characterized by a variety of nervous symptoms. Some animals turned in circles; others sat up with posterior paralysis and still others were found lying on the

flank whilst making paddling movements with the legs. Several efforts to isolate a virus were made in this outbreak before success was achieved.

Except in the case of the stools, virus was isolated by the inoculation of brain intracerebrally into rabbits. Later experiments showed that in the majority of animals infection resulted following either intracerebral or intramuscular inoculation. One out of four pigs inoculated intracerebrally and two out of three pigs inoculated intramuscularly with the dog virus became sick and recovered. Two rabbits inoculated subcutaneously remained healthy.

The symptoms in rabbits began with paralysis of the extensor muscles of the head and neck causing the head to drop forwards or to turn to one side. Simultaneously one or both forelimbs became paralysed. Later the animal, although able to stand, would fall at the slightest touch and whilst lying on the flank would undergo convulsive contractions of all the muscles. Hyperaesthesia was noted. After the crisis the animal appeared exhausted. Within 24 hours of the onset of symptoms it was unable to stand, crises became less and less severe until paralysis was complete. The incubation period was 6-17 days and the duration of illness 1-7 days.

Histopathologically, inflammatory lesions with congestion and small haemorrhages and with diffuse and perivascular round cell infiltrations, destruction of neurons and rather rare neuronophagia were found in the spinal cord.

The viruses appear to be differentiated from rabies by symptomatology and the fact that a percentage of pigs recovered after developing nervous symptoms. The wide host susceptibility appears to rule out Borna disease, Teschen disease and distemper. The incubation period would seem too long for Aujeszky's disease, moreover, of all the animals inoculated only one cat had a tendency to scratch the site of inoculation. Preliminary tests suggest that the dog and pig viruses protect against each other. The papers are intended only as preliminary communications.—J. R. HUDSON.

NICOL, G. (1950.) Control of fowl pox. Tests with pigeon-pox vaccine.—*J. Dep. Agric. Vict.* 48, 543-545. 2005

The Victorian Department of Agriculture tested pigeon pox virus for the control of fowl pox. Noticeable features were the mild reaction to vaccination, the fact that laying pullets could be vaccinated without a drop in egg production and that the vaccine could be used over a greater age range than the fowl pox vaccine used previously.

It is suggested that under Victorian conditions the vaccination should be carried out from early February onwards; pending further work on young stock, pullets under 16 weeks of age should not be vaccinated; and that reactions should be examined on the tenth day.

Results indicate that pigeon pox vaccine will prove beneficial in the control of fowl pox.

—N. WICKHAM.

WAGNER, R. R. & BENNETT, I. L. Jr. (1949.) Effect of receptor-destroying substances upon the febrile response of rabbits to influenzal viruses.—*Nav. Med. Res. Inst. Bethesda. Rep.* No. 5, pp. 8. [Authors' summary copied verbatim.] 2006

The effect of treating rabbits with materials which destroy the cell receptors for influenzal viruses upon the ability of these animals to respond with fever to injection of the PR8 and Lee strains of influenza virus and Newcastle disease virus (NDV) is described. In general, both cholera vibrio and *Clostridium welchii* filtrates produced diminution of febrile responses. The effect of sodium periodate upon the pyrogenic reaction was not significant.

Near-lethal amounts of these materials were necessary to demonstrate their protective effects against virus challenge. In order to rule out general debility as a factor in lessening the fever, it was shown that the ability of animals to respond to the pyrogenic effect of typhoid vaccine was unimpaired by injection of receptor-destroying substances.

The substances tested were more effective in abolishing the febrile response to PR8 virus than that after Lee virus of NDV. This finding is compatible with previous studies of the protective effect exerted by homologous and heterologous viruses.

These findings give support to the hypothesis that union of virus and host receptor substance plays a part in the production of fever by these viruses.

STONE, J. D. (1949.) Inhibition of influenza virus haemagglutination by mucoids. II. Differential behaviour of mucoid inhibitors with indicator viruses.—*Aust. J. exp. Biol. med. Sci.* 27, 557-567. [Author's summary copied verbatim.] 2007

The mucoid inhibitors, ovomucin, cyst mucoid and sheep salivary mucin, were treated with influenza virus and the inhibitory titres assayed with three different "indicator" viruses. The mucoid lost its inhibitory activity for the various indicators in a certain definite order so that the indicator viruses could be arranged in a

gradient corresponding with the receptor gradient obtained in the action of virus on the red cell. The gradient was characteristic of a particular mucoid but varied from one mucoid to another. The strains of virus differed in their capacity to destroy the inhibitory titre of mucoid for the different indicators. The same gradient was obtained in the action of the cholera enzyme (RDE) on ovomucin as in virus action.

Absorption of ovomucin with virus-coated cells removed the inhibitor as assayed with homologous indicator. Its effect on the inhibitory titre for heterologous indicator varied according to the position in the gradient of the virus used in the absorption.

ARCHETTI, I. & HORSFALL, F. L. (1950.) **Persistent antigenic variation of influenza A viruses after incomplete neutralization *in ovo* with heterologous immune serum.**—*J. exp. Med.* 92. 441–462. [Authors' summary copied *verbatim*.] 2008

Antigenic variants of influenza A virus strains emerge on serial passage *in ovo* in the presence of immune serum against different but related strains. An old laboratory strain (PR8) which had been through hundreds of animal passages was as readily modified by this procedure as recently recovered strains. Such variants apparently can be obtained at will and show antigenic patterns which are reproducible and appear to be predictable in terms of the immune serum used for their selection. Variant strains retain their new antigenic patterns on serial passage *in ovo* in the absence of immune serum. Limited serial passage *in ovo* of strains in the absence of immune serum did not result in the emergence of antigenic variants. Similarly, serial passages of strains *in ovo* in the presence of immune serum against widely different strains, which failed to show significant cross-neutralization, did not lead to the appearance of antigenic variants.

FAZEKAS DE ST. GROTH, S. (1950.) **Studies in experimental immunology of influenza. I. The state of virus receptors and inhibitors in the respiratory tract.**—*Aust. J. exp. Biol. med. Sci.* 28. 15–29. [Author's summary copied *verbatim*.] 2009

In mice experimentally infected with influenza virus the number of available virus-receptors in the respiratory tract drops during the acute phase of the disease. Measurable receptor destruction starts at the time when virus concentration in the lungs has attained its maximum; its extent is proportional to the size of the infective dose.

Coinciding with the appearance of specific antibody and the decrease in the virus content of the lungs, regeneration of receptors is demonstrable. Evidence is furnished that this regeneration starts earlier but is partly masked by the presence of enzymically active virus capable of maintaining a dynamic equilibrium between destruction and regeneration of receptors.

The mucoid inhibitor for heated LEE virus normally present in the respiratory tract, disappears within 48 hours after infection and does not reappear till the sixth day. During the early stages of recovery (8th to 20th day) the amount of inhibitor in bronchial washings is approximately ten times more than in normal mice.

Administration of large doses of killed virus vaccines (nasally, peritoneally or subcutaneously), or of live virus by routes other than the nasal, does not cause any change in the number of available receptors or the inhibitor content of the respiratory tract.

The mechanism of infection by and resistance to influenza viruses is discussed in the light of the findings and the conclusion is reached that the changes described are insufficient to cause any difference in the host's susceptibility to super- or re-infection.

FAZEKAS DE ST. GROTH, S. & DONNELLEY, M. (1950.) **Studies in experimental immunology of influenza. II. Production of viral antigens.**—*Aust. J. exp. Biol. med. Sci.* 28. 31–44. [Authors' summary copied *verbatim*.] 2010

The amount of virus haemagglutinin and of the soluble complement-fixing antigen (CF-antigen) was estimated in the lung tissue and the bronchial washings of mice given live and inactivated preparations of influenza virus by the nasal, peritoneal or subcutaneous routes. After nasal instillation of live virus the maximal haemagglutinin titres are fairly uniform over the range of infections with 100,000 to 1 ID₅₀. After infections with fractions of an ID₅₀ the titres reached are proportionately lower; no haemagglutinin was detectable after instillation of 0·0001 ID₅₀. After inoculation of more than 1 ID₅₀ the time between infection and the peak of virus concentration is inversely proportional to the size of the infective dose.

In all infections with 0·1 to 100,000 ID₅₀, virus detectable by the haemagglutination test is present in the lower air passages within 48 hours after inoculation. Haemagglutinin disappears from both the lung tissue and the bronchi between the sixth to eighth days after infection, at the time when specific antibody appears. Complement-fixing antigen was demonstrable in all lungs which contained haemagglutinin (after

100,000 to 0.001 ID₅₀); uniformly high titres were reached after infective doses higher than 1 ID₅₀. The maximum CF-antigen concentration is attained somewhat earlier than that of the virus haemagglutinin. CF-antigen does not appear in detectable quantities in the bronchial washings, and it disappears from the lungs at the same time as the haemagglutinin (6–8th day).

Administration of live virus by routes other than the nasal, or of killed vaccines by any route, does not give rise to haemagglutinin or CF-antigen production in the lungs.

The results are correlated, and the mechanism of infection, together with the factors determining its spread, are discussed.

FAZEKAS DE ST. GROTH, S. & DONNELLEY, M. (1950.) *Studies in experimental immunology of influenza. IV. The protective value of active immunization.*—*Aust. J. exp. Biol. med. Sci.* 28. 61–75. [Authors' summary copied verbatim.] 2011

Mice were immunized with graded doses of influenza virus vaccines (live or inactivated by formaldehyde or heat) by three different routes (intranasal, peritoneal or subcutaneous). At the height of their serological response the animals were tested for their resistance to experimental infection with influenza virus type A and B. A new method was devised to assess quantitatively the protection afforded by immunization.

Mild experimental infection gives rise to an approximately 10⁴-fold increase in specific resistance to re-infection with the homologous strain.

Peritoneal vaccination with 200–300 agglutinating doses of live, formol- or heat-killed virus increases protection by the order of 1,000, the same amount of virus given subcutaneously by approximately 100.

The resultant immunity is a direct function of the dose of virus given in the vaccine. There is no detectable difference in immunizing power of live or inactivated vaccines of identical haemagglutinin content when administered by one of the extra-respiratory routes.

Given intranasally inactive virus lacking enzyme activity (heated vaccines) provides better protection than an equivalent amount of enzymically active killed vaccine (formolized virus).

None of the vaccines, administered by any of the routes used, affords any protection against infection by the heterologous type of virus.

The results are correlated with the serological findings at the day of challenging, and it is shown that resistance to infection varies independently from the serum antibody titres, but that there exists a strong positive correlation between the

antihaemagglutinin content of bronchial washings and the degree of specific immunity. On these grounds the use of the serum antibody level as the measure of susceptibility to infection is criticized, and the necessity of determining the antibody present at the site of possible infection stressed.

FAZEKAS DE ST. GROTH, S. & DONNELLEY, M. (1950.) *Studies in experimental immunology of influenza. V. Enhancement of immunity by pathotopic vaccination.*—*Aust. J. exp. Biol. med. Sci.* 28. 77–85. [Authors' summary slightly modified.] 2012

Specific resistance after immunization by extra-respiratory routes with influenza virus vaccines can be significantly enhanced by simultaneous nasal administration of a heterologous virus, in itself incapable of affording any protection. The phenomenon is termed pathotopic potentiation, and any substance capable of eliciting such a response, a pathotopic adjuvant.

The increased resistance is positively correlated with an increase in the specific antihaemagglutinin content of bronchial washings; there is no detectable change in the serum antibody level, i.e. the enhancement is brought about by a change in the distribution and not in the quantity of antibody produced.

Irrespective of its degree, the initial immunity resulting from extra-respiratory vaccination was increased by 20–100-fold, with a corresponding shift in the antibody distribution coefficient.

It is demonstrated that the phenomenon is not due to the simultaneous presence of two antigens in the organism, and that only states of immunity with a low antibody distribution coefficient can be potentiated, and these only by the administration of the adjuvant by the appropriate route (at the site of virtual infection).

MELNICK, J. L., CLARKE, N. A. & KRAFT, L. M. (1950.) *Immunological reactions of the Coxsackie viruses. III. Cross-protection tests in infant mice born of vaccinated mothers. Transfer of immunity through the milk.*—*J. exp. Med.* 92. 499–505. [Authors' summary copied verbatim.] 2013

Maternal antibodies to the Coxsackie viruses (C virus) are conveyed to newborn mice through the colostrum and milk of vaccinated mothers. No evidence for or against placental transmission of immunity was obtained. The immunity conferred on the young is type-specific. Immunity may be conferred to infants born of non-immune mice by allowing a suckling period of 24 to 48 hours with an immune mother. Immunity

appears to be transferred through the milk for the duration of lactation.

Strains of C virus can be typed by challenging infant mice born to mothers vaccinated with known types according to the outline presented above.

Complement-fixing antibodies are also transferred from vaccinated mother mice to their offspring.

YAKUSHEV, V. I. (1947.) [Therapy and prophylaxis of infectious equine encephalomyelitis.]—*Veterinariya, Moscow*. 24. No. 5. pp. 4–7. 2014

After preliminary tests on 30 rabbits, Y. injected 20 ml. swine fever serum into the occipital subarachnoid space of two horses and a foal and stated that it penetrated the blood-brain barrier in these animals. Twenty-four hours later they were given a lethal dose of equine encephalomyelitis virus. The two horses did not react, but the foal died 16 days later. Using the same method, a 20 ml. dose of an anti-anthrax serum was injected into each of eight horses affected with equine encephalomyelitis; six recovered. These experiments were considered to indicate that any antiserum will immunize, whether specific or not, if injected intrathecally. It is possible that the action is mechanical, the serum blocking the cells and thus preventing the access of virus.

The reports of cure by the injection of hexamethylene tetramine were referred to and it was stated that by the subcutaneous injection of swine fever serum along with that drug the latter aided the serum to pass the blood-brain barrier.

Y. stated that administration by the subcutaneous route is less effective than by intrathecal injection.—F. A. A.

HUDSON, J. R. (1950.) Rapport préliminaire sur une tentative en vue d'obtenir l'amélioration d'un vaccin contre la peste bovine. [Passage of rinderpest virus in pigs.]—*Bull. Off. internat. Epiz.* 33. 203–204. 2015

H. comments on the susceptibility of domestic pigs in Siam to rinderpest in contrast to those of Kenya which are very resistant. He records the passage of lapinized rinderpest virus in pigs in Siam. Experiments are being continued to ascertain whether pigs may be used for production of virus suitable for immunization of buffaloes in Siam.—M. C.

HUDSON, J. R. & WONGSONGSARN, C. (1950.) The utilisation of pigs for the production of lapinized rinderpest virus.—*Brit. vet. J.* 106. [453–472. 2016

A drawback to the use of lapinized virus in

some countries has been the difficulty of obtaining sufficient rabbits for production of the virus in quantity. The authors have studied the reaction of pigs to inoculation with lapinized virus. The literature on rinderpest in pigs is first briefly reviewed. It would appear that outbreaks of rinderpest in domestic pigs have never been recorded from Europe or Africa but have been from many parts of Asia. Pigs of European breeds would appear to be relatively resistant as compared with the Asiatic breeds. The Siamese pigs with which the authors worked, varied considerably in their susceptibility and for the experiments described endeavour was made to obtain pigs as far as possible of the native type. Successful passage of the Nakamura III lapinized virus was obtained from pig to pig for 17 passages and also alternately in pigs and rabbits. The virus was dried without loss of titre. This virus is of no value for immunization of the relatively resistant Siamese cattle. In Siamese buffaloes which are more highly susceptible than the cattle the virus gave a good immunity without provoking any clinically detectable reaction. The duration of the immunity has not yet been determined. About 1,200 doses were obtainable from one pig whereas only about 200 doses of inactivated vaccine could be obtained from one buffalo.

Preliminary work on passage of goat virus in pigs suggested that the virulence might become sufficiently attenuated to provide a strain suitable for immunization of the Siam breed of buffaloes.

—M. C.

JACOTOT, H. (1950.) Rapport concernant le contrôle et la standardisation des sérums et vaccins contre la peste bovine. [Standardization of rinderpest sera and vaccines.]—*Bull. Off. internat. Epiz.* 33. 168–183. 2017

This is a review of existing methods used in the standardization of rinderpest serums and vaccines.—D. LUKE.

LALANNE, A. (1948.) La vaccination antipestique avec le virus capripéste. [Rinderpest immunization with goat virus.]—*Bull. Serv. Elev. Industr. anim. A.O.F.* 1. 23–30. 2018

Favourable results are recorded of a field trial of goat virus vaccine in about 12,000 zebu cattle in French West Africa. Mortality following inoculation was less than 1 : 1,000 in areas free from rinderpest. In an infected area 1,037 cattle were inoculated and about 2% died.

—M. C.

FENSTERMACHER, R. & KERNKAMP, H. C. H. (1949.) Sub-typical hog cholera.—*Proc. 18th Ann. Conf. Veterinarians, Ohio*. pp. 6–11. 2019

Cases of sub-clinical swine fever are described in 4 herds of pigs characterized by lengthy atypical illness becoming more typical in contact pigs as time went on. In one herd it was associated with a previous vaccinal history. Illness of up to 39 days' duration was observed. It is felt that early symptoms, associated with a rise in temperature are not often recognized and advice is not sought until disease becomes clearly evident.—G. V. LAUGIER.

GAYOT, G. (1950.) Remarques sur la préparation et l'utilisation du vaccin, au cristal-violet contre la peste porcine. [The preparation and use of a crystal violet swine fever vaccine.]—*Arch. Inst. Pasteur Algér.* 28. 130-143. 2020

Laboratory and field tests on a crystal violet swine fever vaccine are reported. The vaccine proved to be a simple, cheap, and effective prophylactic and rendered the inoculated animals immune for at least six months.—J. M. JACOBS.

LAMBRANZI, R. (1948.) Nota preventiva sulla paralisi contagiosa dei maiali. [A new form of paralysis in swine.]—*Clin. vet., Milano.* 71. 119-120. 2021

This infection is said to be similar to Teschen disease, affecting pigs of all ages but especially weaners and poor doers.

It is caused by a neurotropic virus and may have acute, sub-acute or chronic forms. In the acute form, after an incubation period usually of 9-10 days, symptoms of dulness, loss of appetite and sometimes vomiting appear. If there is a rise in temperature it is at the onset of the infection (41° C.). Then there is restlessness, staggering gait, and giddiness, followed by hypersensitivity of the skin to touch, cramps, rigidity of the neck, paralysis first of the hind quarters and later of the whole body and death in 2-3 days.

No lesions can be found in the skin or internally, beyond an encephalomyelitis which can only be detected by histological examination.

A description of the other forms is also given. This is said to be the first description of the infection in Italy.—K. SLAVIN.

JOSHUA, J. (1950.) Hepatitis contagiosa canis (Rubarth.)—*Vet. Rec.* 62. 566. 2022

A clinical communication giving details of two cases encountered in the North London area. Helpful diagnostic features were the profound depression, high temperature and the pain provoked by pressure in the xiphisternal area, the latter due probably to changes in the gall-bladder. The changed temperament of both dogs was noteworthy: in each case the normal good temper was replaced by an irritability

amounting to a hyperaesthesia with consequent resentment on attempted handling.

—ALASTAIR N. WORDEN.

WEISS, E. (1950.) The effect of antibiotics on agents of the psittacosis-lymphogranuloma group. [Feline pneumonitis]. 1. The effect of penicillin.—*J. infect. Dis.* 87. 249-263. [Author's summary copied verbatim.] 2023

The effect of penicillin on the agents of feline and murine pneumonitis grown in the yolk sacs of chick embryos was studied. Although the two agents appeared equally susceptible, the effect on the more virulent feline pneumonitis virus could be more accurately determined. The agent of murine pneumonitis, however, because of the early appearance of its vesicles in tissue sections, proved very valuable for morphological investigations. Penicillin, in concentrations of 10 to 10,000 units, delayed the average day of death (ADD) of the infected embryos. The delay was proportional to logarithmic increases of penicillin suggesting that it was determined by the rate of destruction and/or elimination of the antibiotic. Protected embryos eventually died and were shown to have heavy viral infections. The efficacy of penicillin, although relatively independent of viral concentration and time of administration, stopped abruptly when administered less than 48 hours before the expected death of the embryos, or the length of a complete developmental cycle. A microscopic study revealed that penicillin prevented division of the virus particle but allowed an abnormal type of growth to take place. The granules making up the initial bodies, clusters, and vesicles developed into large irregularly shaped, vacuolated plaques. It is suggested that the virus developing abnormally under the influence of penicillin continues to injure its host cell. Therefore, penicillin is effective only when given before a large number of host cells are invaded.

GOGOLAK, F. M. & WEISS, E. (1950.) The effect of antibiotics on agents of the psittacosis-lymphogranuloma group. [Feline pneumonitis]. II. The effect of aureomycin.—*J. infect. Dis.* 87. 264-274. [Authors' summary copied verbatim.] 2024

Aureomycin in concentrations of 0.025 to 0.25 mg significantly prolongs the life of chick embryos infected with the agent of feline pneumonitis. The delay of average day of death (ADD) is directly proportional to the amount of aureomycin given, indicating that in the chick embryo the antibiotic is destroyed at a constant rate. The effect of aureomycin is markedly independent of virus concentration (from 10 to

100,000 LD₅₀) and time of administration. The antibiotic is effective up to 24 hours before the expected death of the embryos. Under the influence of the antibiotic initial body division is prevented and growth is greatly retarded. The granules making up the clusters and vesicles slowly enlarge and eventually become small plaques. It appears that aureomycin is a more powerful inhibitor of the activity of feline pneumonitis virus than penicillin.

LITTLEJOHN, A. I. (1950.) **Enzootic abortion in ewes—an investigation into the naturally occurring disease.**—*Vet. Rec.* 62. 571–577. 2025

The author investigated 102 outbreaks of abortion in ewes on farms situated in the counties of Roxburgh, Berwick and Selkirk. Management of the flock, distribution and incidence of the disease, and the clinical picture of the disease are described. It is important to differentiate “enzootic” (“psittacosis-like”) abortion from abortion caused by *Vibrio foetus*, *Salmonella abortus-ovis*, *Brucella abortus*, tick borne fever, or non-specific (e.g. traumatic) causes. Two types of outbreak encountered could not satisfactorily be classed as any known type of abortion.—G. B. S. HEATH.

KNEELAND, Y. Jr. & PRICE, K.M. (1950.) **Treatment with chloramphenicol, aureomycin, and terramycin of the pneumonia of mice caused by feline pneumonitis virus.**—*J. Immunol.* 65. 653–660. [Authors' conclusions copied verbatim.] 2026

Intranasal infection of mice with the Baker strain of feline pneumonitis virus has been treated by parenteral injections of chloramphenicol, aureomycin or terramycin.

Chloramphenicol in a single daily dose of 1.0 mg appeared to exert relatively little effect on the pneumonitis resulting from such infection.

Under similar conditions both aureomycin and terramycin were highly effective not only in preventing gross pulmonary lesions if treatment was begun early, but in reversing such lesions when treatment was delayed. With early treatment the action of the two antibiotics was almost indistinguishable; where treatment was delayed, aureomycin appeared somewhat more effective; relapses were less frequent after short courses of the latter drug.

Neither aureomycin in 0.1% or 10% solutions nor terramycin in 0.2% solution was virucidal *in vitro*. *In vivo* the virustatic action did not seem to be an immediate one, as virus multiplied in the lungs for a few days when treatment was begun early, although gross lesions did not appear.

JACOTOT, H. (1948.) **Vaccination contre la peste aviaire. [Vaccination against fowl plague.]**—*Rec. Méd. vét.* 124. 28–31. 2027

The author describes the use of formalized mixed tissue suspension with aluminium gel as an adjuvant as vaccine against fowl plague in Indo-China. While spleen pulp furnished the most efficient vaccine, the use of other tissues, e.g. lungs, is advocated. Although the use of such tissues may slightly reduce the efficiency of the vaccine it increases the yield and makes large-scale field vaccination a more economic proposition.—D. LUKE.

ANON. (1950.) **Mémoire sur la maladie de Newcastle dans l'Union Sud-Africaine, à la date du 16 janvier 1950. [Newcastle disease in S. Africa up to January, 1950.]**—*Bull. Off. internat. Epiz.* 33. Nos. 9–10. 494–501. 2028

This report records the progress of Newcastle disease in the Union of South Africa from its initial appearance in the Durban area in December 1944, up to mid-January 1950. There is a brief note on the methods of control used.

—D. LUKE.

SCHOENING, H. W. & OSTEEN, O. L. (1948.) **Newcastle disease in the United States of America.**—*Off. Rep. 8th World's Poult. Congr., Copenhagen.* Vol. I. pp. 636–641. [In English. Danish & French summaries.] 2029

Newcastle disease is believed to have been present since about 1936 in California. It is now known to be present in 43 States, the District of Columbia and in the Territory of Hawaii. The methods of transmission, symptoms, lesions, diagnosis and control are all briefly discussed.—M. C.

ADLER, H. E., WILLERS, E. H. & CAMPBELL, J. (1951.) **Newcastle disease (avian pneumo-encephalitis) in Hawaii.**—*Amer. J. vet. Res.* 12. 44–47. [Authors' summary slightly modified.] 2030

From the literature and their own data, the authors consider that under their local conditions of poultry management there is justification for the use of formalized virus on laying hens in the initial stages of their vaccination program. Killed virus vaccination of the layers may be followed two to three weeks later by live virus vaccination of birds from 5 weeks to 5 months of age. All birds less than 4 weeks of age should be kept in isolation until live virus vaccine is administered at about 5 weeks of age. If practical, chicks or eggs should be purchased from known immune flocks.

COLLIER, W. A., POLAK, M. F. & VERHAART, W. J. C. (1950.) Infektion des Affen mit dem Virus der Pseudovogelpest (Newcastle disease). [Experimental infection of monkeys with the virus of Newcastle disease].—*Hemera Zoa*. 57. 415–427. [In German. English & French summaries. Abst. from summaries.] 2031

After cross-passage of the virus of Newcastle disease through monkeys, g. pigs, squirrels, rabbits and rats it was possible to make serial passages through monkeys and g. pigs.

One monkey strain proved to be still pathogenic for fowls, whereas another monkey and a g. pig strain had lost their virulence. The disease in monkeys progresses as an encephalitis, or may be latent.

The lesions in monkeys were those of an atypical polio-encephalitis which closely resembled Japanese B-encephalitis.

BEACH, J. R., BANKOWSKI, R. A. & QUORTRUP, E. R. (1948.) A preliminary report on the modification of avian pneumoencephalitis [Newcastle disease] virus by cultural methods. —*Cornell Vet.* 38. 341–357. 2032

In virus passaged by yolk sac inoculation of chick embryos there was a decline in virulence for 30–60-day-old chickens at the 21st passage. At the 72nd passage there was evidence of a decline in antigenicity. The virulence of the passaged virus for chick embryos was unaffected. The attenuated virus had little tendency to spread from affected to healthy chickens.

The attenuated virus was subjected to passage *via* the allantoic cavity in an attempt to restore virulence. This procedure, however, resulted in further attenuation. Passage *via* the allantoic cavity and the yolk sack of duck embryos failed to produce any reduction in virulence after 28 passages *via* the allantoic cavity or after 10 passages *via* the yolk sac.

Virus propagated *in vitro* retained its virulence for embryo chicks, but it declined in virulence and antigenic power for chickens.

—D. LUKE.

HOWITT, B. F. (1950.) A nonspecific heat-labile factor in the serum neutralization test for Newcastle disease virus.—*J. Immunol.* 64. 73–84. [Author's summary copied *verbatim*.] 2033

From the further studies on the neutralization tests against Newcastle disease virus in human sera reported here, it has been found that the positive results previously published [*V.B.* 19. 607] were due to a nonspecific heat-labile factor present in the sera in varying amounts according to the conditions of serum preservation. Heating to 56° C. for 30 minutes completely destroyed the virucidal activity of

all sera except those from specifically immunized animals. The neutralizing activity of immune sera was lowered by inactivation but could be enhanced by addition of fresh normal serum.

This virucidal factor for NDV was found in large amounts in the normal sera of man, monkey, rabbit, and guinea pig in correlation with the hemolytic activity of the complement. It was absent in the sera of the ferret, hamster, chicken, and mouse, although complement was detectable in the sera of the first three animals but not in that of the mouse. It may be associated quantitatively with one of the four components of complement, although there remains the possibility that another serum component may be the responsible factor.

Both the complement and the neutralizing ability for NDV of normal sera can be preserved for over a year if the serum is kept frozen either at –10° C or in the dry ice refrigerator. These activities are completely lost, however, after storage at 4° to 6° C for varying time periods.

BANG, F. B., FOARD, M. & KARZON, D. T. (1951.) Mode of action of heat labile serum inactivating substance on Newcastle disease virus.—*Johns Hopk. Hosp. Bull.* 88. 83–100. [Author's summary slightly modified.] 2034

A heat labile virus neutralizing factor is present in the sera of man, monkeys, rats, rabbits and in small amounts in fowl sera. It has not been detected in mouse sera. This factor does not react with the virus immediately but dependent upon concentration and possibly upon temperature, attains a certain degree of virus inactivation within one to two hours. The reaction does not proceed appreciably beyond this point at the dilutions tested. Fresh human normal sera cause the virus to lose the capacity to agglutinate red cells and to change shape when placed in hypertonic saline.

With increasing amounts of virus exposed to the serum there is an increase in the total amount of virus inactivated but a decrease in the percentage of virus inactivated.

The high degree of activity of this substance in fresh sera and plasma and its uniform presence in such sera under a variety of conditions encourages the belief that it has significance in relation to resistance to disease.

BOTIJA, C. S. & LOIZELIER, A. B. (1948.) La vacunacion como medio de profilaxis frente a la peste aviar en España. [Immunization against Newcastle disease in Spain.]—*Bol. Inf. Col. Vet. Esp. Supl. cient.* 2. 1–16. 2035

This is a discussion on the epidemiology of Newcastle disease in Spain, and gives details

of the principles and practise of vaccination against the disease. The prophylactic in use is the chick embryo vaccine adsorbed on aluminium hydroxide and formolized.

The authors believe that vaccination will never eradicate the disease in Spain, but that in conjunction with sanitary measures it will keep the disease in check. They report 97% success in vaccination of 800,000 fowls to date, mainly in large flocks, but it is the small isolated flocks of poultry which form the chief obstacle to eradication by vaccination.—I. W. JENNINGS.

FABER, H. K., SILVERBERG, R. J., LUZ, L. A. & DONG, L. (1950.) **Studies on entry and egress of poliomyelitis infection. III. Excretion of the virus during the presymptomatic period in parenterally inoculated monkeys.**—*J. exp. Med.* 92. 571–589. [Authors' summary and conclusions slightly modified.] 2036

Excretion of poliomyelitis virus has been demonstrated in monkeys after four different parenteral routes of inoculation. Virus has been found in both the pharyngeal secretions and the stools after infraorbital nerve dip and after inoculation of the Gasserian ganglion; in the pharyngeal secretions after intrathalamic inoculation; and in the stools after inoculation of the celiac ganglion.

Excretion began as early as the 2nd and as late as the 7th day after inoculation, in all instances before the onset of symptoms. The immediate source of the excreted virus appeared to be infected peripheral ganglia with neural connections to the mucous membranes of the upper and lower portions of the alimentary tract, notably the pharynx. Primary infection of the body surfaces was excluded in the experiments and therefore could not account for the excretion of virus. The mode of elimination was probably by centrifugal spread through axons of peripheral nerve fibres and not by way of the blood stream or lymphatics. Evidence was obtained that when excretion of virus has once occurred, reinvasion from the implicated surface to other, previously uninfected peripheral ganglia ensues, thus providing new sources for excretion and other potential pathways for invasion of the central nervous system. It is suggested that such reinvasion may occur serially until the immunological defenses come into play.

These findings lend support to the view that during the initial stage of poliomyelitis, and perhaps throughout its course in some cases, e.g. the asymptomatic and the mild cases without central nervous symptoms, infection is confined to the peripheral nervous system. Involvement of the central nervous system when it occurs is a

secondary phase of the infective process and is not a necessary prelude to elimination of the virus.

Excretion is explainable on the basis of the established neurocytotropism and axonal conduction of the virus without resort to the hypothesis of extraneural infection.

LESLEY, S. M., FRENCH, R. C. & GRAHAM, A. F. (1950.) **Studies on the relationship between virus and host cell: The preparation of T2r+ bacteriophage labelled with radioactive phosphorus.**—*Canad. J. Res. Sec. E.* 28. 281–288. [Author's abst. copied verbatim.] 2037

T2r+ bacteriophage grown in its host, *Escherichia coli* B. in broth medium in the presence of radioactive inorganic phosphorus was labelled with the isotope. Purified suspensions of this virus had specific activities up to 50,000 c.p.m. per μ gm. P. There was little or no exchange of P^{32} between virus and inorganic phosphate. Chemical analysis showed that at least 98% of the virus phosphorus was contained in nucleic acid; of the nucleic acid phosphorus 95.5% was associated with desoxyribose nucleic acid and 4.5% with ribose nucleic acid. More than 99% of the radioactivity of the labelled bacteriophage was contained in the nucleic acid fraction. Preparations of bacteriophage were obtained with sufficiently high specific activity to enable metabolism experiments to be carried out on the growth of the labelled virus in the host cell.

MIRRI, A. (1950.) **La diagnosi allergica delle febbre Q negli animali. [Allergic reaction for diagnosis of Q fever in animals.]**—*Clin. vet., Milano.* 73. 167–170. 2038

M. inoculated 277 goats, 44 sheep and 82 cows in the lower eyelid with rickettsial diagnostic antigen, Q fever type Nine Mile American, 1:32, using 0.2 ml. for sheep and goats and 0.38 ml. for cattle. They were tested for complement fixation and also for sensitivity to Mirri's brucellin by agglutination tests and allergic reaction.

Results of the complement fixation test and the allergic reaction to Q fever agreed in 85% of the goats 97% of the cattle and 91% of the sheep tested.—K. SLAVIN.

STOKES, J. (1950.) **"Q" fever in South Australia: I. Isolation of causative organism from four cases and its identification as *Rickettsia burneti*.**—*Med. J. Aus.* 11. 745–750. [Author's summary copied verbatim.] 2039

The occurrence of "Q" fever among abattoir workers in South Australia in the

summer of 1947-1948 is recorded. The isolation of *Rickettsia burneti* from two hospital patients and in two cases of laboratory infection, is described. The preparation of antigens from infected yolk sacs and of immune serum in guinea-pigs is described. The close immunological relationship between locally isolated strains and the Henzerling strain is demonstrated.

BLANC, G., MARTIN, L.-A. & BRUNEAU, J. (1949.) Q. fever expérimentale de quelques animaux domestiques. [Experimental "Q" fever in domestic animals.]—*Ann. Inst. Pasteur.* 77. 99-107. 2040

The susceptibility of cattle, dogs, camels, sheep and goats to *R. burneti* was tested experimentally by inoculation of material from infected g. pigs, chick embryos or ticks. All these species proved to be susceptible as evidenced by a thermal reaction and by positive reactions to agglutination and complement-fixation tests. Ticks fed on the experimental animals at the time of the thermal reaction became infected.

—M. C.

COMBIESCO, D. & DUMITRESCO, N. (1949.) Survie *in vitro* de *Rickettsia burneti* de la fièvre Q en Roumanie. [Viability *in vitro* of *Rickettsia burneti*.]—*Ann. Inst. Pasteur.* 76. 79-80. 2041

Infected g. pigs were bled from the heart into sterilized tubes on the third or fourth day after infection. 2 ml. of blood was collected in each tube, allowed to clot and then covered with a layer of sterilized liquid paraffin. The tubes were plugged with cotton wool and kept at room temperature. G. pigs were infected by injection with samples of this blood up to nine months after the date of collection.—M. C.

BLANC, G., BRUNEAU, J., MARTIN, L.-A. & MAURICE, A. (1948.) Quelques données nouvelles sur le virus de la Q fever marocaine. [Virus of Moroccan Q fever.]—*C. R. Acad. Sci., Paris.* 226. 607-608. 2042

Strains of *R. burneti* have been isolated from sheep and goats, from ticks and from a wild rodent (*Meriones shawi*). Transmission of infection through the egg of a *Hyalomma* tick has been observed. Cattle and camels artificially infected had a febrile reaction and developed agglutinins against *R. burneti*. Infected ticks have been collected from camels, cattle, donkeys, goats and sheep.—M. C.

PHILIP, C. B. (1949.) Scrub typhus, or tsutsugamushi disease.—*Sci. Mon., N.Y.* 69. 281-289. 2043

Scrub typhus was attributed by Japanese peasants to bites of "red mites", the aka mushi or tsutsugamushi long before scientific investigation proved this to be the case. These trombiculid mites spend part of their larval stage as parasites of mammals or birds, but most of their lives in the soil. They are vectors of *Rickettsia tsutsugamushi*. Many rats and voles carry infected mites, as do sparrows, jungle fowl and other birds.—R. MACGREGOR.

GISPEN, R. (1950.) The virus of murine typhus in mites. (*Schöngastia indica*, FAM. Trombiculidae.)—*Doc. Neerl. Ind. Morb. Trop.* 2. 225-230. [In English. Author's summary modified.] 2044

Natural infection with murine typhus was demonstrated in trombiculid mites. Five strains of rickettsiae were isolated from 2,598 larvae of *Schöngastia indica* caught on 82 wild rats. The infected larvae originated from house rats (*R. rattus diardi*) and sewer rats (*R. norvegicus*).

Four of the strains were transmitted to guinea pigs and were examined in 4-16 passages; they produced pyrexia and reactions in the scrotum, tunica vaginalis and peritoneum (characteristic of murine typhus). Mooser-cells filled with rickettsia were microscopically demonstrated in all five strains.

Two of the strains which could be examined in cross tests of complement fixation did not serologically differ from a Javanese and an American strain of murine typhus. They showed no antigenic relationship to a scrub typhus strain from Java.

Sch. indica larvae feed on digested host tissue in the manner of the Trombiculidae. From the biology of *Sch. indica* and the occurrence of the virus in a large percentage of wild rats in Djakarta, it can be deduced that rats are the primary source of infection. Out of the five infected groups of larvae, four originated from non-infected rats, the larvae having acquired the virus apparently by congenital contamination.

Transmission experiments with *Sch. indica* are required, but the mites cannot yet be bred in the laboratory. As *Sch. indica* larvae occur in the central districts of Djakarta on 49.7 to 4.31% of rats, this species might appear to be an important vector of murine typhus from rat to rat. This does not hold for the transmission from rat to man, as the latter is not attacked by the mite.

See also absts. 1956 (equine encephalomyelitis); 1996 (eperythrozoonosis in pigs); 2045 (aluminium gel in rinderpest and rabies vaccines); 2070 (virus theory of cancer); 2197 (report, Canada); 2198 (report, St. Kitts-Nevis); 2199 (report, Uganda); 2200 (report, East Africa); 2201 (report, Sierra Leone); 2203-2204 (report, U.S.A.); 2205 (report, Yugoslavia.).

IMMUNITY

JACOTOT, H. (1949.) Sur quelques emplois du gel d'alumine en tant que substance adjuvante et stimulante de l'immunité. [Aluminium gel in vaccines (rinderpest, rabies, etc.).]—*Rev. Immunol. Thérap. antimicrob.* **13.** 177–182. **2045**

In artificial immunization J. recommends vaccines in which the antigenic substance is adsorbed on to aluminium gel. Using such vaccines, immunity against rinderpest, rabies, blackleg and swine erysipelas, were studied.

The details of preparation and testing of the vaccines are given. In each case better protection resulted from the use of aluminium-adsorbed vaccine than untreated vaccine. The rinderpest antigen moreover was stable for longer periods after adsorption on aluminium. The animals used for trial were cattle (several groups of five) for rinderpest, g. pigs (totals of 59 and 77) for rabies and blackleg, and pigeons (total of 45) for swine erysipelas.

—G. FULTON ROBERTS.

MASON, J. H. (1951.) Alkali-dissolved diphtheria toxoid-antitoxin floccules adsorbed on aluminium carriers. Immunisation of adults. —*Lancet.* **260.** 504–507. [Author's summary copied *verbatim*.] **2046**

Dissolved diphtheria toxoid-antitoxin floccules precipitated with potash alum (P.D.F.) or adsorbed on aluminium phosphate (A.D.F.) form antigens that produce a satisfactory immunity in adults. The reactions produced are much fewer and less severe than those caused by alum-precipitated toxoid or by formol-toxoid.

Though P.D.F. and A.D.F. are not likely to cause reactions, the Schick and Schick-control tests should be applied in all persons over the age of 6 years before immunisation is started, so as to pick out the occasional hypersensitive person who might react severely.

COHEN, S. G. (1950.) The placental transmission of antibodies and serum γ globulins.—*J. infect. Dis.* **87.** 291–298. [Author's summary copied *verbatim*.] **2047**

A series of 32 pregnant female rabbits were given human and bovine serum γ globulin and a similar series of 10 rabbits received homologous anti-serum intravenously. After varying time intervals precipitin studies were made on the serum of the mother and fetuses removed by Cesarean section. Comparative serum titers determined by precipitin tests indicate a difference in the placental transmission of heterologous serum γ globulin and homologous antibodies in

the rabbit. The transmission of human and bovine γ globulin was delayed and these did not appear in the fetal circulation until after 10 hours, and the titer in maternal and fetal serum were not equal until 5 days following administration. Homologous antiserum, on the other hand, passed through the placenta rapidly, was found in the fetal serum in one hour, and was found in equal titer in the circulation on both sides of the placenta at 4 hours. An explanation for the difference in behaviour of heterologous serum γ globulin and antibody globulin at the placental barrier is not apparent. Speculation as to the possible reason for this and its implications are discussed.

SMITH, A. U. (1949.) The antigenic relationship of some mammalian spermatozoa.—*Proc. Roy. Soc.* **136.** Ser. B. 472–479. [Author's summary copied *verbatim*.] **2048**

Antisera prepared in goats, sheep and rabbits against the spermatozoa of rodents, cross-agglutinated strongly spermatozoa of other rodents, weakly those of ferret and dog, and not at all those of bull, goat and fowl.

After absorption of these antisera with whole spermatozoa of the species against which they had been prepared, homologous reactions were abolished, but heterologous reactions persisted. When absorbed with heterologous spermatozoa of any species the various antisera failed to agglutinate spermatozoa of that species only.

Spermatozoa which had been fragmented by grinding absorbed homo- and hetero-agglutinins from the homologous antiserum, but only reduced the agglutinin content of heterologous antisera.

The results suggested that antigens on the surface of spermatozoa of rodents of one species were more deeply situated in those of other species, and that the spermatozoa of rabbit and guinea-pig were more closely related to one another than they were to those of mouse.

TERZIAN, L. A. (1950.) The sulfonamides as factors in increasing susceptibility to parasitic invasion.—*J. infect. Dis.* **87.** 285–290. [Author's summary copied *verbatim*.] **2049**

It has been demonstrated quantitatively that a specific biochemical compound can influence the innate immunity of a host to a specific parasite. Thus, it has been shown that sulfanilamide and sulfadiazine, administered in 0.1% concentration in the mosquito diet, will increase the innate susceptibility of *Aedes aegypti* to

Plasmodium gallinaceum. The maximal effect of these sulfonamides depends upon a specific optimal drug concentration, and the effect is decreased when sulfanilamide and sulfadiazine are administered in 0.2% concentration in the mosquito diet. Para-aminobenzoic acid, administered in sufficient concentration along with effective concentrations of sulfadiazine, inhibits

the action of sulfadiazine and nullifies its effects on the susceptibility of the host. This relation of metabolite to innate immunity may well be fundamental to the mechanism of innate immunity in animals in general, in which case it may provide in part an explanation for the nature of the mechanisms of innate immunity and of host-parasite specificity.

See also *absts.* 1912-1913 (serological differentiation of streptococci); 1914 (pneumococcal agglutinins); 1915 (anthrax vaccine); 1928-1930 (tuberculin); 1938 (*Shigella paradysenteriae* somatic antigen); 1939 (serological diagnosis of *S. abortus-equi*); 1946 (vaccination against brucellosis); 1949 (allergy in brucellosis); 1951 (strain 19); 1973 and 1978 (serology in canine leptospirosis); 1994 (serology in toxoplasmosis); 1999 (keeping quality of F. & M. disease vaccine); 2005 (pigeon pox vaccine against fowl pox); 2007 (haemagglutination-inhibition of influenza virus); 2008 (antigenic variation of influenza A viruses); 2009-2012 (experimental immunization against influenza); 2013 (Coxsackie viruses, immunology); 2015 (pig-passage of rinderpest virus); 2016 (lapinized rinderpest virus); 2017 (standardization of rinderpest sera and vaccines); 2018 (rinderpest goat virus); 2020 (crystal violet swine fever vaccine); 2027 (fowl plague vaccination); 2032-2035 (Newcastle disease); 2038 (allergic reaction for diagnosis of Q fever); 2088 (*Leptospira* agglutination and lysis in periodic ophthalmia); 2121 (serum bactericidal factor); 2160 (serological diagnosis of *Salmonella* in meat); 2184 (non-agglutinating antibody test for *S. typhi* O).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

DENNELL, R. (1950.) **Epicuticle of blow-fly larvae.** [Correspondence.]—*Nature, Lond.* 165. 275. 2050

When portions of cuticle from *Calliphora erythrocephala* larvae were treated with the fluid obtained from the semi-liquid digest of the host tissues, the epicuticle remained intact but the endocuticle dissolved. The function of blowfly epicuticle appears to be to protect the larva from digestion rather than from desiccation, as in the case of *Rhodnius* and *Tenebrio*.

—BERYL A. THURSTON.

WATERHOUSE, D. F. (1950.) **Connective tissue strands in blowfly larvae.**—*Aust. J. Sci.* 13. 25-26. 2051

Connective tissue strands were found in several regions in larvae of *Lucilia cuprina*:—(a) in the head region of the malpighian tubules, (b) between the blind end of each granule-accumulating region of the tubule and the blind end of the second pair of tubules, (c) supporting the posterior half of the granule region, and (d) attaching the blind ends of the second pair of tubules to the hindgut.

The significance of connective tissue in insects is discussed.—H. McL. GORDON.

WESTERMARCK, H. (1949.) **Warble fly eradication in Finland compared with preventive measures in other countries.**—*Nord. Vet.-Med.* 1. 669-684. [In English.] 2052

Large-scale trials on warble fly eradication were carried out in certain regions of Finland during 1947-48. A derris preparation containing 8% rotenone and used as a solution had a killing effect of 98.5-99.7%. Derris oil, gam-mexane-xylol and 4% derris powder were not sufficiently effective. Regular examination and treatment of herds during April-July rapidly cleared areas from the pest, but fresh con-

tamination could readily occur from neighbouring regions.

It is therefore recommended that the whole country be divided into treatment districts and that each should have a personnel sufficiently large to enable all herds to be kept under observation.—BERYL A. THURSTON.

BRACEY, P. (1950.) **The persistence of DDT crystals in the coats of sprayed cattle, with special relation to tsetse control.**—*Brit. vet. J.* 106. 358-360. 2053

Small-scale field trials were conducted using an oil-bound suspension of D.D.T. at a strength of 2.5 or 5% sprayed on to the necks of Ayrshire cattle to determine the period of protection against *Glossina palpalis*, the amount of spray applied being adjusted to leave a theoretical coverage of 500 mg. of D.D.T. per sq. ft. Hair clippings from the sprayed area were taken on progressive dates and placed in gauze cages with a number of the flies, the mortality among these being used as an indicator for the efficiency of the spray. Two days after spraying there was an 86-96% mortality, which favoured the use of the more dilute spray. All flies survived exposure to the material collected at the 11th day.

In a repeated trial spraying, in which there was a theoretical skin coverage of 2,000 mg. of D.D.T. per sq. ft., there was a 90-100% kill for the first seven days, but none by the 13th day.

From results with one cow (a Shorthorn) with longer hair than in the Ayrshires used in the experiments it was suggested that a thick rough coat provided a better medium for the retention of D.D.T. than a finer coat.—D. W. JOLLY.

HADAWAY, A. & BARLOW, F. (1947.) **Toxicity of DDT applied to limewash.**—*Bull. ent. Res.* 38. 489-495. [Authors' conclusions copied verbatim.] 2054

There is a marked loss of toxicity when DDT is applied to limewash as a solution in kerosene. This loss occurs not only when on fresh limewash but also on limewash several months old. The amount of DDT adsorbed by the lime particles is too small to account for the non-availability of the insecticide. The loss of toxicity is not due to any chemical change or decomposition; most of the insecticide can be recovered. It seems that loss of toxicity is due to absorption and the consequent masking of the insecticide. The addition of adhesives to the limewash does not prevent absorption. A similar loss of toxicity occurs when an emulsion [spoken of as] A.19 is sprayed on to limewash. Guesarol dispersible powder [contains 5% D.D.T.] is slightly more promising. Dispersible powders with higher DDT contents are needed for trials; the large amount of inert material in Guesarol powder seems to mask the effect of the insecticide.

MAKUKHIN, S. A. (1949.) [**"SK-9", a parasiticide for domestic animals and birds.**]—*Veterinariya, Moscow*. 26. No. 10. pp. 46–47. 2055

Since September 1948 "SK-9" preparation has been widely used in the U.S.S.R. with great success in treatment of domestic animals, including poultry, as a parasiticide as well as for various skin infections such as erythema, eczema, mange, etc. It is a liquid containing chlorinated turpentine with 54% fixed chlorine, cod-liver oil and other substances; and forms a stable emulsion with water. Used as a wash or as a bath, in 1–2% dilution, two or three applications are usually made at intervals of 2–7 days. The

See also absts. 1985 (triatomid bugs as vectors of Chagas' disease); 2044 (mites as vectors of murine typhus); 2130 (insecticide); 2157 (effect of parathion on dairy cows); 2209 (book, entomology and protozoology).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

RAMÍREZ VILLAMEDIANA, J. J. & VERGANI, F. (1949.) Contribucion al estudio del ciclo evolutivo de la fasciola hepatica en Venezuela. [**Life history of *Fasciola hepatica* in Venezuela.**]—*Rec. grancolomb. Zootéc. Hig. Med. vet.* 3. 817–838. 2058

In this study of the life-cycle of *F. hepatica* the authors used snails of the species *Lymnaea cubensis*, collected from the irrigation ditches of a market garden. The district was fairly free from domestic animals but a few human cases of distomatosis had been reported in the vicinity.

A representative sample of snails of a batch were ascertained to be free from *Fasciola* infection and the remainder were infected artificially with miracidia of *F. hepatica*. On the fifth day

emulsion is warmed to 25–37° C. and may be removed with warm water a few hours later.

—F. A. A.

ELRINGTON, J. D. & IVERS, S. W. (1950.) **Erection of power sprays in relation to the dairy premises.**—*Qd agric. J.* 71. 221–227. 2056

The authors described suitable modifications of installations available at cow yards and milking sheds for the erection of power sprays for treating dairy herds infested with cattle tick.

Plans of three suitable layouts and photographs of erected units are given.—M. SCOTT.

SPENCE, T. (1949.) **The latent phase of sheep scab: its nature and relation to the eradication of the disease.**—*J. Comp. Path.* 59. 305–318. 2057

During the latent phase of sheep scab, the mites persist on the body surface, in the ears, infraorbital fossae, inguinal pouches, interdigital fossae, vulvar folds and on the scrotum and perineum. Perineal, scrotal, and vulvar reactions produce moist inflammatory areas similar to those which occur on the body surface, but reactions to infestation in the other latency sites are much less marked, although they may eventually become severe enough to kill the mites.

Infested sheep became clinically normal after being sheared but, in almost every case, clinical scab recurred when the wool became longer; mites in the latency sites were demonstrated on most of the sheep during the stage of clinical cure. Infestation could not be set up during the summer months.—G. B. S. HEATH.

sporocysts and the first rediae were noted in the snails. On the 40th day fully developed cercariae were noted and on the 41st day these were liberated into the surrounding water and began to encyst in about 30 min., some on the vegetation and others on the snails.

The cycle of evolution was completed by infecting some rabbits by ingestion with the metacercariae and recovering *F. hepatica* 60–70 days later from the liver.

In resistance tests, the miracidia were found to be susceptible to raised temperature and to the presence of salt or copper sulphate in the water. A 1 : 1,000 solution of the latter proved lethal in eight min.; a 1 : 100,000 solution was lethal in six hours.—I. W. JENNINGS.

BHALERAO, G. D. (1948.) *Schistosomiasis in animals*.—*Proc. 4th Internat. Congr. Trop. Med. Malar.* pp. 1386–1393. 2059

Schistosomiasis in domestic animals causes serious decreases in vitality, production and in the commercial value of certain organs e.g. liver. Tartar emetic and sodium antimony tartrate give good control, but antimosan (a complex salt of antimony and catechol-potassium-sulphonate) is superior since it can be administered subcutaneously and is less toxic. Control is discussed.

—BERYL A. THURSTON.

DA SILVA LEITAO, J. L. (1947.) Estudos sobre Equinococose. A parasitose em Portugal: sua extensão e importancia. [Studies on *Echinococcus granulosus* in Portugal.]—*Arq. Patologia, Lisboa*. 19. 265–375. [English summary.] 2060

A general account of echinococcosis from all aspects, both in animals and in human beings, with reference to the disease in Portugal.

Pigs are mainly infested in Portugal. Cattle, sheep and goats follow in that order, but in other countries the order of frequency varies. This may be explained by the various methods of animal husbandry used. Thus, in Australia the order of infestation is: cattle, sheep and pigs; in Hungary, pigs, cattle and sheep.

The great majority of hydatid cysts found in pigs are fertile, but the reverse in the case in cattle.

Dogs are the main link in the infestation of human beings and arecoline hydrobromide is recommended for treatment of dogs. For prophylaxis the author relies mainly upon a close and thorough meat inspection service and on exclusion of dogs from abattoirs; destruction of stray dogs; education of the rural population; general hygiene; and care in handling dogs. Numerous statistical tables are included.

—F. A. ESTEVES.

SWIERSTRA, D. (1950.) Maagdarmstrongylosis bij het rund. [Gastro-intestinal strongylosis in cattle.]—*Tijdschr. Diergeneesk.* 75. 237–244. 2061

This is a general account of the subject, the differential diagnosis of gastro-intestinal strongylosis in cattle from other conditions being taken into account. S. gives, in some detail, the differentiation of the eggs of the several species of strongyles concerned. From the stages of development of the eggs in fresh faeces information can be obtained as to the situation of the adult worms, i.e. whether they are in the abomasum or duodenum or in the lower end of the small intestine and in the large bowel. In haemonchosis, anaemia is marked but there is

no diarrhoea. In oesophagostomiasis appetite is consistently good.

Egg counts are unreliable since the smaller species produce fewer eggs than the larger ones. Less than three to six hundred eggs per g. may be counted in affected animals. The author emphasizes that at P.M. examination *Trichostrongylus* spp. and *Cooperia* spp. and the nodules containing the larvae of *O. radiatum* are easily missed, a wrong diagnosis therefore being possible in such circumstances. The following are the worms concerned with gastro-intestinal strongylosis in Holland:—*Ostertagia ostertagi*, *Trichostrongylus axei*, *Cooperia* spp., *Haemonchus contortus*, *Nematodirus filicollis*, *Oesophagostomum radiatum* and *Bunostomum phlebotomum*. The last mentioned is of little or no importance.

The death rate from gastro-intestinal strongylosis is less than from lungworm infestation, but economic loss results from retarded development, decreased production and waste of fodder on such animals. Rotational grazing, draining of pastures, avoidance of over-stocking, and the administration of phenothiazine in suitable dosage are the essential prophylactic measures.

—P. L. LE ROUX.

GORDON, H. McL. (1950.) Some aspects of parasitic gastro-enteritis of sheep.—*Aust. vet. J.* 26. 14–28; 46–52; 65–72; & 93–98. 2062

There is a brief note on the recorded outbreaks in England in 1895 and 1933–34, and in Australia in 1932–33, and a general comment on biotic and pathogenic potentials of helminths.

The grouping together of the many species which singly or collectively may cause parasitic gastro-enteritis has produced complications in relation to epidemiology, pathogenesis, symptomatology and treatment of the several helminthiases. Some tests of anthelmintics have given anomalous results probably because of differential effects against different species constituting the cases of “parasitic gastro-enteritis” in which they were carried out.

The individual parasites are considered, firstly with general comments on differences in habitats, habits, life-cycles, biotic potentials, pathogenic potentials, bionomics of free-living stages, and responses to anthelmintics. The more important helminths of sheep in Australia, (*Haemonchus contortus*, *Trichostrongylus* spp., *Oesophagostomum columbianum*, *Ostertagia* spp., *Chabertia ovina*, *Nematodirus* spp.) are considered in more detail. For each parasite there are notes on reasons for importance, pathogenic effects and symptoms, seasonal occurrence, pathogenic numbers and significant egg counts.

There are brief comments on the less important helminths (*Moniezia* spp. and *Helicometra giardi*, immature paramphistomes, *Cooperia* spp., *Bunostomum trigonocephalum*, *Strongyloides papillosus*, *O. venulosum* and *Trichuris ovis*).

The extent and significance of parasitic gastro-enteritis in Australia is considered from the points of view of number of sheep involved, number of worms involved, costs to pastoral industry (with results of a number of field trials) and costs of control measures (with figures for sales of anthelmintics).

In one region of New South Wales, during a period of the year when *H. contortus* infestations are at low levels it is estimated that the sheep population may harbour 532,600,000 worms weighing 1,442 tons, and removing 1,248 gal. of blood daily.

It is probable that immunological relationships will eventually prove of greatest significance in the development of infestation though it must be remembered that the free-living stages of the helminths are exposed to great hazards. Immunological relationships appear to influence the proportion of infective larvae which develop into adult worms, the rate of development to maturity, the rate of egg production and the longevity of the adult worms, all of which have a profound influence on epidemiology.

There appears to be a fairly direct relation between nutrition and resistance of the host, and there are many indirect relations associated with the acquisition of infective larvae, e.g. time spent in grazing, area grazed in unit time, level at which herbage is grazed, overstocking and overcrowding. Methods for testing anthelmintics are discussed. The necessity for differential egg or larval counts when dealing with "strongyle" or "strongyloid" eggs is emphasized.

There are notes on the following anthelmintics:—copper sulphate, copper sulphate-arsenical mixtures, copper sulphate-nicotine sulphate mixture, tetrachlorethylene, carbon tetrachloride and phenothiazine. The application of anthelmintics in control should be strategic and tactical [see Gordon, *V.B.* 19. 160] rather than curative. The timing of strategic treatments for the summer rainfall regions of eastern Australia is given in tabular form. The number of occasions for tactical treatments against haemonchosis during the years 1944-47 are shown. Costs of strategic and tactical treatments are given.

GORDON, H. McL. (1949.) Recent advances in the treatment of internal parasites.—*Yearb. Inst. Insp. Stk., N.S.W.* 1949. pp. 58-59; 61; 63-65; 69; & 71-72. 2063

General principles of the use of anthelmintics were discussed.

WIRTH, D. (1947.) Lungenwurmkrankheit des Hundes. [Lungworm disease in a dog.]—*Wien. tierärztl. Mschr.* 34. 768-771. 2064

A dog of French origin died 16 days after admission to a clinic in Vienna. There was catarrhal infiltration near the bifurcation of the bronchi, the bronchial lymph nodes were enlarged and *Angiostrongylus vasorum* were present in the branches of the pulmonary artery.

—M. L. CLARKE.

WERNER, J. J. (1949.) Caricide in the treatment of strongyloidiasis in the dog.—*Vet. Med.* 44. 496-497. 2065

A Cocker Spaniel, four months old, was given 400 mg. of caricide, diethylcarbamazine acid citrate *per os* (45 mg. per lb. body weight). Later faecal tests were negative and the dog recovered.—H. G. CLARK.

GALOFRÉ, E. J. & ROSA, W. A. (1947.) Ensayos sobre resistencia de huevos de ascaris del caballo. [Viability of ova of *Ascaris equorum*.]—*Publ. Fac. Agron. Vet., B. Aires*, No. 3. pp. 30. [English summary.] 2066

Ascaris equorum causes considerable economic loss to horse breeders by causing anaemia and decalcification at a critical period of the foal's growth as well as occasional deaths from peritonitis or pneumonia. The authors described 28 experiments intended to determine the period required for unused pasture to become free from ova. At 5°-10° C. in humid conditions ova survived and were infective for two years and two months; those kept under a film of water survived longer than those surrounded by faecal matter. At temperatures of 20°-36° C. the survival period was about six months, but was longer in faecal matter than in water only. In view of these long periods of survival the authors counselled reliance on intense medication of all young stock rather than on the clearing of infested ground.—R. MACGREGOR.

MCGAUGHEY, C. A. (1950.) Preliminary note on the treatment of spirocercosis in dogs with a piperazine compound, caricide (Lederle).—*Vet. Rec.* 62. 814-815. 2067

Six dogs which had typical symptoms of infestation with *Spirocerca lupi* (*S. sanguinolenta*) were treated with "caricide" (1-diethylcarbamazine acid citrate).

The drug was given orally in doses of approximately 10 mg. per lb. body weight daily for from 4-20 days. In all cases marked clinical improvement was observed.

It is also stated that "caricide" is being tested for treatment of dogs with filariasis caused by *Dirofilaria repens*.—M. C.

CANET, J. & JAHAN, P. (1950.) Essais de traitement de la filarose canine en Indochine par le 1-diéthyl carbamyl 4-méthylpipérazine. [Treatment of canine filariasis with hetrazan.]-*Bull. Soc. Path. exot.* 43. 470-482. 2068

The failure of "notezine" (1-diethylcarbamazine acid citrate) to cure filariasis in three dogs is reported. The cases were treated in

Indo-China and diagnosis rested upon the clinical symptoms and microscopic examination of the blood. Temporary improvement in the symptoms was observed, but relapse occurred on withholding the drug and the blood stream was not freed from filaria.

The identity of the filaria in these cases was not definitely determined as no adult worms were available for examination, but they were thought to be *Dirofilaria immitis*. [*D. repens* does not seem to have been considered as a possibility.]-M. C.

See also absts. 2097 (helminths and canine hysteria); 2140 (*Spirocerca sanguinolenta*); 2198 (report, St. Kitts-Nevis).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

STÜNZI, H. (1949.) Vergleichende Betrachtungen zum Krebsproblem beim Tier. [The cancer problem in animals.]-*Schweiz. Arch. Tierheilk.* 91. 292-303. 2069

A discussion of the comparative aspects of neoplasms, particularly carcinoma in domestic animals, with special reference to the incidence as regards species, age, breed, and organ systems. The frequency of thyroid tumours in dogs shown by statistics from Zürich and Stockholm was mentioned. The incidence, site of origin, rate of growth and power of metastasis of certain animal neoplasms as compared with human tumours was discussed, the value of the comparative study of tumours was emphasized.—E. COTCHIN.

ANDREWES, C. H. (1950.) The bearing of recent work on the virus theory of cancer.—*Brit. med. J.* Jan. 14th. 81-85. 2070

In considering the continuing proliferation of cancer cells, the two main possibilities are that it is due to a virus, or that it is the result of a mutation of somatic cells. The author first considers in turn the necessary properties of a cancer virus, and shows that none of these fall outside the range of properties of a known virus. He then discusses critically the Imperial Cancer Research Fund lectures by Gye [W. E. (1949) *Brit. med. J.* 1. 511] and Craigie [J. (1949) *Ibid.* 2. 1435], which have contained suggestions that certain malignant tumours of mice are transmissible by something other than intact living tumour cells. These claims rest on the assumption that in the transmission experiments in question, the tumour cells failed to survive intact the action of glucose, freezing and, particularly, drying. It is concluded that a very cautious interpretation of the experimental results is necessary, and that further work is needed.

—E. COTCHIN.

HOLMAN, H. H. & WELLS, A. J. (1950.) The attempted treatment of the leukosis complex by intraperitoneal injection of potassium iodide.—*Vet. Rec.* 62. 422. 2071

Thirty Rhode Island Red pullets, being kept on range and not in lay, which had signs varying from dullness to the complete paralysis of a wing or leg, were obtained in August from a poultry farm where the number of cases of fowl paralysis had suddenly increased. They were sorted out into pairs matching as nearly as possible in clinical symptoms, and one bird of each pair was treated with potassium iodide [see *V.B.* 11. 326], receiving on each of two successive days an intraperitoneal injection of 5 ml. of a 10% solution. Treated and untreated birds were kept together in an inside pen, in which the bedding was renewed every other day and were observed for 33 weeks. At the end of 15 weeks, nine treated and three untreated birds remained alive, but at the end of the 33 weeks, only one treated and two untreated birds remained alive. In the fatal cases in the treated group, diagnostic symptoms were noted before death, and in 11 cases the disease was confirmed by P.M. examination. All but one of the fatal cases in the untreated group had symptoms of fowl paralysis before death, and lesions were found in ten on P.M. examination.—E. COTCHIN.

MEISTER, A. (1950.) Lactic dehydrogenase activity of certain tumors and normal tissues.—*J. Nat. Cancer Inst.* 10. 1263-1271. [Author's summary copied verbatim.] 2072

The lactic dehydrogenase activity of 19 tumors and 20 normal tissues of the mouse and rat was investigated employing a spectrophotometric assay procedure based upon the rate of pyruvate reduction, and followed by observation of the change in absorption of dihydrodi-

phosphopyridine nucleotide. The values for the tumors studied were higher than, or the same as, the corresponding tissues of origin except in one case. The greatest differences were observed between normal mouse skeletal muscle and rhabdomyosarcoma, and between lung and lung tumors. The variation in activity among the tumors was about one-third that of the normal tissues. It was concluded that tumors possess appreciable lactic dehydrogenase activity, and that the level of activity in tumors lies in about the middle of the range for normal tissues. Tumors reduced pyruvic, α -ketobutyric, and α , γ -diketovaleric acids in the presence of dihydrodiphosphopyridine nucleotide at approximately the same relative rates as did normal mouse skeletal muscle and crystalline beef heart lactic dehydrogenase.

MORSE, W. I. (1950.) **Single cell autographs of bone marrow and blood from rats using radio-active phosphorus.**—*Amer. J. med. Sci.* **220**. 522–519. [Author's summary slightly amended.] 2073

Single cell autographs of marrow and peripheral blood elements are reported for the first time following the injection of P^{32} in rats. In the small number of satisfactory preparations studied, the youngest erythropoietic and granulopoietic forms from the marrow had the most intense autographs, indicating rapid phosphorus turnover. Autographs of megakaryocytes and lymphocytes are faint at best. If the observations of more selective uptake by marrow elements than occurs in the lymphatic system are substantiated, it would suggest that radio-active phosphorus has some advantages over Roentgen ray therapy in myelogenous leukemia. The technique at present has many limitations. Desirable improvements and some applications to hematological problems are discussed.

SHAPIRO, D. M. & GELLHORN, A. (1951.) **Combinations of chemical compounds in experimental cancer therapy.**—*Cancer Res.* **11**. 35–41. [Authors' summary and conclusions copied verbatim.] 2074

The effect of combinations of chemical compounds in cancer chemotherapy has been investigated. By the use of the guanine analog, 5-amino-7-hydroxy-1*H*-*v*-triazolo (*d*) pyrimidine, together with either desoxyypyridoxine, pteroylglutamic acid, 7-methyl pteroylglutamic acid, or vitamin B_{12} , it has been shown that the growth of a transplantable carcinoma of the breast in mice can be inhibited to a greater extent by a combination than by any one of the drugs alone. Evidence has been presented to show that the

combinations are not acting by causing host toxicity, for the observed effects are associated with minimal to no weight loss. The possible mechanisms of action are discussed.

It is recognized that in no instance did a combination eradicate the tumor being treated; however, the possibility of utilizing more effective agents in combination or of increasing the number of active chemical compounds in combination offers an attractive approach to achieve this end.

LEITER, J., DOWNING, V., HARTNELL, J. L. & SHEAR, M. J. (1950.) **Damage induced in sarcoma 37 with podophyllin, podophyllotoxin alpha-peltatin, beta-peltatin, and quercetin.**—*J. Nat. Cancer Inst.* **10**. 1273–1293. [Authors' summary copied verbatim.] 2075

In an investigation in which some 3,000 mice bearing sarcoma 37 were employed, it was found that: Four compounds present in podophyllin accounted for most of the tumor-damaging activity of the crude drug. Podophyllotoxin, alpha-peltatin, and beta-peltatin were highly potent, quercetin was also active, but was required in a much larger dose. The minimum effective dose, for a single subcutaneous injection, was about 2 micrograms per gram of body weight for the three highly potent compounds. The maximum tolerated dose, in a single injection, was in the range of 30 to 40 micrograms per gram for these three compounds. Tumor damage was observed grossly as early as 6 hours after injection. Intravenous and oral administration produced similar damage to Sarcoma 37, but much higher doses were required *via* the oral route.

GREENSPAN, E. M., LEITER, J. & SHEAR, M. J. (1950.) **Effect of alpha-peltatin, beta-peltatin, and podophyllotoxin on lymphomas and other transplanted tumors.**—*J. Nat. Cancer Inst.* **10**. 1295–1318. [Authors' summary copied verbatim.] 2076

Alpha-peltatin, beta-peltatin, and podophyllotoxin were injected sub-cutaneously into mice bearing 5 types of transplanted tumors and into rats bearing a transplanted carcinoma. The mouse tumors employed were: an acute stem-cell leukemia; a metastasizing lymphosarcoma; a local lymphosarcoma; a mammary adenocarcinoma; and a melanoma. About 1,000 animals were employed in the experiments. The results obtained were as follows: A single injection of each of these compounds induced extensive damage in all the tumor types investigated. Metastases responded like the main tumor mass. Both the minimum dose required to produce this effect and the maximum dose

tolerated varied with the type of tumor and of host. The range between these dose levels was greatest for the lymphomas and least for the melanoma; it was intermediate for the carcinomas. Tumor growth was temporarily retarded in the case of the lymphomas and of the rat carcinoma. Treated animals bearing lymphatic tumors survived longer than the controls;

those with the melanoma died sooner than their untreated controls. Complete regression of tumor was not obtained in any of the experiments in the study. The substances delayed the rise in the number of stem cells in the peripheral blood in mice with the leukemia. In both normal and tumor-bearing mice, treatment with these drugs caused shrinkage of spleen and thymus gland.

See also absts. 2023-2024 (effect of antibiotics on agents of psittacosis-lymphogranuloma group); 2202 (report, U.S.A.).

NUTRITIONAL AND METABOLIC DISORDERS

REID, R. L. (1950.) **Studies on the carbohydrate metabolism of sheep. II. The uptake by the tissues of glucose and acetic acid from the peripheral circulation.**—*Aust. J. agric. Res.* 1. 338-354. [Author's summary copied *verbatim*. For part I, see *V.B.* 21. 95.] 2077

The level of volatile fatty acid in the peripheral blood of sheep is considerably higher than in non-ruminants, arterial levels reaching 10 mg. per cent. (as acetic acid) or higher. That the level is related to fermentation in the rumen is indicated by its steady decrease during fasting. In sheep fed on rations of widely differing composition, 86-95 per cent. (molar basis) of the total volatile fatty acid in arterial blood was found to be acetic acid. Small amounts of propionic, butyric, and at least one other acid were also present.

The removal of acetic acid from the arterial blood during its passage through the tissues of the head is considerable, and the extent of its removal is closely dependent upon its arterial level. There was no evidence that acids other than acetic were removed in significant quantities.

The low normal blood-glucose level in fed sheep is associated with a smaller uptake of glucose by the tissues of the sheep than occurs in non-ruminants and this low uptake is compensated by a higher uptake of acetic acid.

Arterio-venous differences of glucose and of volatile fatty acid have been measured in two dogs, after feeding and during fasting, and are compared with the results obtained from sheep.

These findings are discussed in the light of present knowledge of the influence on ruminant metabolism of the rumen and the digestive processes therein.

UNDERWOOD, E. J., CONOCHIE, J., REED, F. M. & SMYTH, R. (1950.) **The value of meatmeal and livermeal as sources of protein.**—*Aust. vet. J.* 26. 323-329 2078

The gross chemical composition of commercial samples of meat meal and liver meal was found to vary widely.

True digestibility and biological value of the protein of a number of samples were assayed by means of Mitchell's N-balance method with growing rats. In seven samples of meat meal, the protein digestibility ranged from 71.6-97.1% and biological value from 28.8-62.0%. In the two samples of liver meal, protein digestibility values of 66.8 and 71.0% and biological values of 53.3 and 43.3% were observed, respectively.

There is a definite similarity between Australian meat meal and American tankage in the digestibility and biological value of their proteins.—R. L. REID.

KRUPSKI, A., ALMASY, F. & ULRICH, H. (1950.) **Über den Einfluss abnormer Fütterungsverhältnisse auf den Kalzium-, Magnesium- und Phosphorstoffwechsel des Rindes. [The influence of abnormal feeding on calcium-, magnesium- and phosphorus metabolism in cattle.]**—*Schweiz. Arch. Tierheilk.* 92. 295-305. [English, French and Italian summaries, abstr. from English summary.] 2079

After feeding hay from the high alps to cattle the retention of calcium and magnesium was insufficient, while the accumulation of phosphorus remained satisfactory. On a ration limited to inadequate amounts of the hay cattle received insufficient calcium, magnesium and phosphorus. The calcium and magnesium insufficiency of a three-year-old heifer was not improved after feeding a mineral supplement. Phosphorus retention remained satisfactory after the same treatment.

YUILE, C. L., HAYDEN, J. W., BUSH, J. A., TESLUK, H. & STEWART, W. B. (1950.) **Plasma iron and saturation of plasma iron-binding protein in dogs as related to the gastrointestinal absorption of radioiron.**—*J. exp. Med.* 92. 367-373. [Authors' summary copied *verbatim*.] 2080

The absorption of a test amount of radioactive iron during artificial saturation of the plasma iron-binding protein, by the repeated

intravenous injection of small amounts of iron, was measured in three normal and four anemic dogs.

The procedure had no detectable influence on the iron absorption of the normal dogs nor on that of two of the anemic dogs. Two other anemic dogs showed some suppression of iron absorption, though the amount absorbed was still in excess of that absorbed by a normal dog. The reasons for this suppression are not clear from these experiments.

Artificially raising the plasma iron to normal levels in one anemic dog did not influence the absorption of iron from the gastrointestinal tract nor was a delayed effect noted after the plasma iron had fallen to base line levels after 5 hours of artificial saturation.

It appears that the plasma iron-binding protein and its relative saturation play little role *per se* in the control of iron absorption in dogs.

STEWART, W. B., YUILE, C. L., CLAIBORNE, H. A., SNOWMAN, R. T. & WHIPPLE, G. H. (1950.) Radioiron absorption in anemic dogs. Fluctuations in the mucosal block and evidence for a gradient of absorption in the gastrointestinal tract.—*J. exp. Med.* 92. 375–382. [Authors' summary slightly modified.] 2081

The control of iron absorption appears to reside in the mucosa of the gastrointestinal tract. The normal dog absorbs very little iron, but the anemic iron-depleted dog may absorb 10 to 20 times as much. This "mucosal block" of the normal dog probably is due largely to iron stores in the mucosa. "Mucosal block" can be effected in the anemic iron-depleted dog by feeding of iron salts, but the degree of "mucosal block" under these conditions never reaches the high degree of "mucosal block" in the normal dog. Rapid movement of iron through the mucosa may explain the short duration of "mucosal block" due to iron feeding in the anemic iron-depleted dogs (18 to 20 hours).

The colon absorbs very little iron under the conditions described. The stomach and duodenum seem to be most active in its absorption. This suggests the existence of a gradient in the capacity of the gastrointestinal tract to absorb iron.

MAGALHAES, L. M. (1949.) Estudo preliminar sobre uma doença não identificada, ainda, em

See also abst. 2210 (book, animal nutrition).

Minas Gerais: a "Chorona". ["Chorona" a disease of cattle in Brazil, possibly a copper deficiency].—*Arq. Esc. Sup. Vet., Minas Gerais.* 2. pp. 67–81. [English summary.] 2082

The disease is believed to be non-infectious since sick animals recover when moved to fresh pasture. Only ruminants are affected. The chief symptom is anaemia and there are no *post-mortem* lesions except emaciation. M. suggests that the cause is a deficiency of copper and/or cobalt. One sick animal improved when treated with copper sulphate. The geographical distribution of the disease and the heavy economic losses caused by it are described.—M. C.

AGNEW, L. R. C. (1949.) Haematuria in pyridoxin-deficient rats.—*Brit. J. Nutrit.* 3. 217–233. 2083

Experiments are described in which rats were fed *ad libitum* synthetic diets deficient in pyridoxine. Each animal was controlled by two litter mates given the same diet supplemented with adequate pyridoxine, one being fed *ad libitum* and the other to keep its weight equal to that of the experimental rat. Diets tested contained either 5% margarine, 5% lard or 5% margarine with additional linoleic acid. The 5% margarine experiment was duplicated with Wistar albino rats instead of Lister hooded rats. Haematuria was observed in all pyridoxine-deficient hooded rats but also in the controls receiving linoleic acid. It was not observed in the paired-weight hooded controls nor in the albino rats. These latter animals, however, had more severe acrodynia-like skin lesions than the comparable hooded rats although the latter developed similar lesions when fed deoxy-pyridoxine in addition to a pyridoxine-deficient diet, suggesting that some endogenous biosynthesis was occurring. The severity of haematuria in hooded pyridoxine-deficient rats did not influence the blood picture, essentially a microcytosis. Haematuria once established was not ameliorated by pyridoxine or by ascorbic acid or rutin. It was not thought to be due to a pyelonephritis or essential fatty acid deficiency. The heart and the kidneys of all the pyridoxine-deficient rats were heavier than those of the controls irrespective of the presence of haematuria.—P. H. HERBERT.

DISEASES, GENERAL

BYRNE, M. J. (1950.) Coronary thrombosis leading to auricular fibrillation in a Thoroughbred gelding.—*Irish Vet. J.* 4. 90–92. 2084

An examination of a gelding six years old revealed irregular intermittence of the heart, the beat varying between 8 to 17 per min. Electro-

cardiograph records showed typical auricular fibrillation and the animal was destroyed. On P.M. examination, multiple grey areas of fibrous tissue were found throughout the myocardium with fibrosis of the coronary arteries running to the lesions, the associated arterioles and capillaries being distended with blood and thrombi. Ischaemic atrophy arising from the thrombosis was also present. There was no history of a previous illness and the aetiology of the condition could not be determined. It is believed to be the first case of coronary thrombosis to be reported in a horse.—J. A. NICHOLSON.

GLATZEL, H. (1949.) Sklerose der Zentralvene in der Leber des Pferdes. [Sclerosis of the central lobular veins of the liver in the horse.]—*Inaug. Diss., Hanover*. pp. 18. 2085

The term "mural sclerosis" (Wandsklerose) is proposed to denote changes seen in many slaughtered horses, both normal and diseased, where hyaline masses appear under the endothelium of the central lobular vein and/or the sublobular veins of the liver, apparently representing a metaplastic change in reticular fibres to collagen fibres, which then reveal a hyaline change, as a result of the action of some unknown damaging agent. The lesion can apparently occur in a one-month-old foal. Although at first subendothelial, the change may extend outwards in the lobules, with local pressure effects on the parenchymatous cells.

—E. COTCHIN.

BRION, A., PELLERAT, J. & CASTRIC, M. (1948.) L'histaminémie dans l'emphysème pulmonaire du cheval. [Histamine levels in pulmonary emphysema in the horse.]—*C.R. Soc. Biol., Paris*. 142. 335–336. 2086

The histamine level in the blood of horses affected with pulmonary emphysema was within, or only slightly above, the normal range, and bore no relation to the severity or duration of the disease. Treatment with a synthetic antihistamine drug had no effect on the respiration of affected horses.—E. COTCHIN.

MAKSIC, D. & BOLTEN, G. (1950.) Nierenleistungsprüfung (Verdünnungs- und Konzentrationsversuch) mittels Hängetopf bei Wallachen. [Examination of horses' urine in order to establish the functioning of the kidneys.]—*Tierärztl. Umsch.* 5. 192–194. 2087

The symptomatology of primary and secondary kidney affections in horses is not well defined, the diagnostic methods usually employed for their detection being the administration of dyes and observation of the rate of their excre-

tion; the determination of the water excretory and concentrating powers of the kidneys; or the estimation of the blood indican, urea and residual N. It is considered that the water excretory and concentrating powers of the kidneys is the best test for veterinary work. The animal is given excess water, the amount varying between 44–88 ml. per kg. body weight, by stomach tube and the volume and specific gravity of the urine recorded at half hourly intervals. In normal horses, the excess water is eliminated in a few hours with a corresponding fall and recovery of the specific gravity whereas in kidney affections there is no sharp change in the half hourly records. The concentrating powers of the kidneys is shown by withholding water for 24–48 hours and then determining the specific gravity of the urine. In normal horses the specific gravity will be markedly increased whereas this remains more or less constant in kidney affections.—J. A. NICHOLSON.

YAGER, R. H., GOCHENOUR, W. S. & WETMORE, P. W. (1950.) Recurrent iridocyclitis (periodic ophthalmia) of horses. I. Agglutination and lysis of leptospiras by serums deriving from horses affected with recurrent iridocyclitis.—*J. Amer. vet. med. Ass.* 117. 207–209. 2088

The authors reported the results of agglutination-lysis reactions for the detection of leptospiral antibodies carried out upon the sera of 35 horses affected with recurrent attacks of periodic ophthalmia and of 86 normal horses. Ten species of leptospira were exposed to the sera. Live organisms were used as the antigen. Accepting 1 : 300 as a significant titre, 94% of the horses with periodic ophthalmia gave positive reactions against *L. bovis*, as compared with less than 12% of the normal horses. Employing the same criterion in the case of *L. pomona*, 86% of the horses with periodic ophthalmia had significant titres, compared with only 12% of the normal horses.—H. PLATT.

OLSON, C., Jr., COOK, R. H. & BROUSE, E. M. (1950.) The relation of feed to an outbreak of bovine hyperkeratosis.—*Amer. J. vet. Res.* 11. 355–365. 2089

An outbreak of the disease occurred at an agricultural experiment station in a group of 162 calves in a nutritional experiment. All the calves had been purchased from one ranch and were kept in 16 paddocks of 10 calves each with two extra calves. The first calf to develop symptoms did so almost three months after purchase. They were fed on meadow hay plus supplements such as dicalcium phosphate, dried lucerne, vitamin A concentrates, cottonseed meal

and so on. In all 26 deaths occurred in six of the 16 paddocks. There was no evidence that the disease was contagious, but it did appear that certain elements in the food enhanced the disease; these were dehydrated lucerne and dicalcium phosphate. Other substances in the food, such as maize, vitamin A supplement and cottonseed meal seemed to have some protective effect.

The disease did not occur among calves of similar age on the farm from which the experiment station calves had been purchased.—M. C.

WEBSTER, H. D., HUFFMAN, C. F., GRAY, M. L. & THORP, F., Jr. (1948.) **Exposure of incisor roots in X-disease.**—*M[ich]. S[r]. C[oll]. Vet.* 10. 15-16. 2090

On P.M. examination of a heifer and two steer calves, slaughtered at approximately one year of age with symptoms of hyperkeratosis, the upper portion of the roots of the deciduous incisor teeth were found to project above the gums. A similar condition was noted in two further calves, both living, that appeared to be recovering from hyperkeratosis.

—ALASTAIR N. WORDEN.

KALCHSCHMIDT, H. G. (1950.) **Zur Fremdkörperkrankung des Rindes, Untersuchung der Erfolgsmöglichkeit konservativer Behandlung.** [*Treatment of traumatic pericarditis in cattle.*]—*Schweiz. Arch. Tierheilk.* 92. 423-437. [English, French and Italian summaries. Abstr. from English summary.] 2091

The conservative treatment for traumatic pericarditis in cattle was successful in only 22.6% of 681 cases. Surgical treatment was decidedly superior to the conservative method. K. made a statistical examination of the results obtained.

RUEBKE, H. J. (1951.) **Bacterial flora of the bovine male genitalia.**—*Amer. J. vet. Res.* 12. 14-19. 2092

A wide variety of bacteria which have been associated with pathological conditions in the bull were found in the genital tracts of 50 apparently normal bulls and steers. Members of the genera *Micrococcus* and *Corynebacterium* predominated. No bacteria were found in the testes, epididymes, ampullae of vasa deferentia, seminal vesicles, prostate, and bulbo-urethral glands of 45 bulls.—H. L. GILMAN.

BAUMANN, R. (1948.) **Kropf und Myxödem bei neugeborenen Ziegen.** [*Goitre and myxoedema of new-born goats.*]—*Wien. tierärztl. Mschr.* 35. 585-592. 2093

A detailed histological description is given of the thyroid glands from nine new-born kids affected by goitre and, in six cases, partial or complete hairlessness and myxoedema. There were three cases of colloid goitre, two of parenchymatous goitre, and four of mixed type. The lesions are compared with those of parenchymatous goitre seen in piglets. While the administration of iodine to the dams prevented further cases, other factors, e.g. protein content of the diet, might have been related to the development of the goitre.—E. COTCHIN.

SOMMER, E. (1948.) **Die Ferkelsterblichkeit in einem bayerischen Landkreis, ihre Ursachen, Bedeutung für die Schweineaufzucht und die Möglichkeiten ihrer Bekämpfung.** [*Causes of piglet mortality in Bavaria.*]—*Inaug. Diss., Munich.* pp. 48. 2094

This is an account of an investigation into the causes of piglet mortality in the district of Kelheim extending over 644 sq. km. in Lower Bavaria and situated at the foot of the Jura mountains. The soil is composed of sand and loam in varying proportions. The climate is "rough" and often marked by late frosts. Most of the farms are small (5-20 hectares) and pigs are kept on a small scale, largely for home consumption.

Since the beginning of the second world war there has been an increase in piglet mortality and in some places attempts to breed pigs have been abandoned. Thus in 1946 the piglet mortality reached 50% in ten districts of Lower Bavaria. Kelheim was one of the districts worst affected and in that year's census only 8,456 piglets and young pigs were enumerated as compared with 16,890 in 1937, although there was no reduction in the number of available sows. In 1937 the average litter size was 8, but in 1946 it was only 3.4. In addition to this the fertility was low. The three main groups of disease causing piglet mortality in order of importance were, diarrhoeic (70%), pneumonic (20%), and diseases referable to the first three days of life (10%). The first group probably included necrotic enteritis and swine fever, whilst piglet influenza evidently figured in the second group.

None of these three types of disease resulted from an acute specific bacterial infection. All were secondary in nature to environmental causes—"constitutional" factors, in-breeding, bad housing and feeding, all acting together. The pigs were mostly housed in old, dark, badly ventilated, cold, damp sties with stone floors. Wooden sties were used on 15% of the farms, but these, though warm, were all dark and stuffy. Only a few farms had good warm ventilated sties

with open-air runs and the pigs kept in them remained free from diarrhoeic disease.

Foodstuffs available for the pigs were of poor quality and particularly deficient in high class protein and practically no meat or fish meal nor oil cake were available and cereals were in short supply.—J. E.

NOBLE, W. A. & FRAME, J. (1950.) **The treatment of bowel oedema in pigs.**—*Vet. Rec.* 62. 544–545. 2095

The authors used phenergan alone, or penicillin alone, without success in an attempt to treat bowel oedema in pigs, but combined treatment, using 2.5 ml. phenergan intramuscularly and 100,000 units penicillin sodium salt subcutaneously, repeated daily for three days, was followed by recovery in 60 out of 80 treated pigs. At least 5 of the 20 that died were probably too far advanced for treatment. On two occasions, when it was possible to leave untreated animals as controls in a litter, these died in 24 hours.

—E. COTCHIN.

LUKASHOV, I. I. (1949.) [Aetiology, pathogenesis, symptoms and differential diagnosis of otitis in piglets.]—*Veterinariya, Moscow*. 26. No. 10. pp. 25–27. 2096

The disease occurs under conditions of poor hygiene and feeding in piglets from a fortnight to seven months old. The inflammation spreads sometimes from the middle and internal ear to the brain. The infection is secondary, following respiratory disease, generally rhinitis and pneumonia. Infection results from the entry of infected mucus into the eustachian tube. The morphology of the ear in piglets may be such as to aid the entry of mucus from the nasopharynx. In acute cases piglets die in 3–5 days. Rarefaction of the affected bones was a feature of the disease. *Pseudomonas pyocyanea* was isolated from affected ears, but L. stated that the presence of some unidentified virus should not be excluded. Symptoms, pathogenesis, pathology and differential diagnosis were described.—F. A. A.

HARE, T. (1949.) **Observations on spasmodophilia in dogs, including canine hysteria.**—*Brit. Vet. J.* 105. 4–14. 2097

The view is advanced that in canine hysteria and other conditions characterized by involuntary muscular contractions there is an underlying morbid process in which fits are merely spectacular events. Records are given of 14 cases, and reference is made to a further 44, in which spasmodophilia was associated with conjoint infection with streptococci and bowel parasites. The bowel parasites incriminated were coccidia, round worms (*Toxascaris* or *Toxocara* sp.), or

hookworms (*Ancylostoma caninum*). It is recommended that treatment be directed against these underlying infections. In some spasmodophilic dogs a fit resulted when streptococcal vaccine, meat broth or milk was injected.

Details are given also of five cases of tonsillitis (associated with streptococci) in which there was coincident infestation with coccidia and in two instances with hookworms as well. In these the signs of fatal intoxication developed very rapidly, and were in three cases ushered in by vomiting and confused behaviour: haemorrhagic watery diarrhoea was followed by fits, rapid weakening, prostration, sub-normal temperature, incontinence, coma and death within 24 hours. P.M. examination revealed multiple haemorrhages, widespread haemolysis, acute hepatic necrosis and pyaemic nephritis.

—ALASTAIR N. WORDEN.

BODINGBAUER, J. (1949.) Histo-pathologische Befunde an Kiefern und Zähnen eines verzögerten Zwerghundes. [Histopathology of the jaws and teeth of a dwarfed Pekingese dog.]—*Z. Stomatologie*. 10. 447–458. 2098

A nine-week-old dwarfed Pekingese female puppy mentally normal, with the size and weight of a five-week-old puppy, showed, besides generally retarded ossification, delayed dentition, abnormally large pulp cavities, short roots, porosity of alveolar bone, disturbed calcification of dentine, hypercementosis, periodontal proliferation, and persistent epithelial (Serres') pearls. These findings are similar to those described in hypophysectomized rats and in a human pituitary dwarf.—E. COTCHIN.

SOMPOLINSKY, D. (1950.) **Urolithiasis in mink.**—*Cornell Vet.* 40. 367–377. [Author's summary slightly modified.] 2099

Thirty cases of urolithiasis have been found during the examination of about 3,200 mink (0.94%) in a period of seven and one-half years [at the State Veterinary Serum Laboratory, Copenhagen]. This is much lower than has been reported in the United States of America.

The composition of 28 of the calculi was determined. The principal constituent of 26 calculi was found to be magnesium ammonium phosphate; of one it was uric acid, and of another it was calcium oxalate.

The cases occurred sporadically, and often there was only one from a particular farm. Of the 28 cases, all but one occurred from April to October inclusive. The 12 cases that occurred in April, May, and June were all in females, whereas, of the 15 cases that occurred in July, August, September, and October, all but three were in males.

It was concluded that there are in Denmark two seasons for urolithiasis in mink: one for females in the spring months, and one predominantly for males at the height of the summer and in the autumn months. The possible etiology of the condition is discussed in detail.

FRIED, K. (1948.) Nomotopné (sinusové) poruchy tvorby podnetov a ich elektrokardiografický obraz u psa. [Electrocardiographic studies in dogs.]—*Čas. československ. Vet.* 3. 638–642. 2100

Electrocardiographic studies were carried out in dogs affected with tachycardia, bradycardia and respiratory arrhythmia. Typical electrocardiograms are given and results are discussed.—E. G.

SELYE, H. (1951.) Rôle of the adrenals in the production of renal and cardiovascular damage by anterior pituitary preparations.—*Lancet.* 260. 483–487. [Author's summary slightly modified.] 2101

Under suitable experimental conditions simultaneous treatment with lyophilised anterior pituitary (L.A.P.) and cortisone causes an experimental simile of "collagen disease" or "hyalinosis" in the rat. This is characterized by an eventually fatal malignant nephrosclerosis with myocarditis (resembling that seen in acute rheumatic fever) and periarteritis nodosa.

Adrenalectomy completely prevents these renal and cardiovascular lesions and enables the rats to remain physically fit despite this hormone treatment.

It is concluded that the active factor in L.A.P. exerts its principal toxic effects, and produces an experimental equivalent of "collagen disease", only in the presence of functioning adrenal tissue.

Observations described elsewhere (Selye 1951) have shown that the so-called "growth hormone", or somatotrophic hormone (S.T.H.), accurately reproduces the hyalinosis syndrome caused by L.A.P. This effect of S.T.H. can be inhibited by cortisone, but only under conditions which permit the latter to induce marked adrenocortical atrophy. Cortisone fails to cause adrenal involution in rats treated with L.A.P. since the latter is rich in A.C.T.H. [adrenocorticotrophic hormone]. This agrees with the view that the author's L.A.P. preparation causes hyalinosis by virtue of the S.T.H. it contains and that the pathogenicity of S.T.H. depends largely upon the functional capacity of the adrenal cortex.

These observations strongly support the concept according to which endogenous suprarenal hormones participate in the pathogenesis of the "collagen diseases".

It has been seen that in many respects A.C.T.H. and the glucocorticoids (such as cortisone), on the one hand, and S.T.H. and the mineralocorticoids (such as desoxycorticosterone), on the other, exert diametrically opposed effects. Hence, the requirements for A.C.T.H. or cortisone in clinical medicine are probably also largely dependent upon the presence of S.T.H. and or mineralocorticoids in the organism.

RATHER, L. J. (1951.) Experimental alteration of nuclear and cytoplasmic components of the liver cell with thioacetamide. I. Early onset and reversibility of volume changes of the nucleolus, nucleus and cytoplasm.—*Johns Hopk. Hosp. Bull.* 88. 38–58. [Author's summary copied verbatim.] 2102

Thioacetamide, in a dietary concentration of 0.032 per cent, has been shown to induce cytological changes in the parenchymal cells of the rat liver which precede by many months the development of a cirrhotic lesion. These cytological changes, consisting in part of enlargement of the parenchymal cells with relatively greater enlargement of the nuclei and nucleoli, are well-developed within two days. In this period of time the mean nuclear volume is shown to double in value. Studies of relative nuclear volumes, based on measurements of large numbers of nuclear diameters in tissue sections, show the normal liver parenchymal cell nuclei to fall into three classes with a ratio of 1 : 2 : 4. Between seventy and eighty per cent of the nuclei fall into the second class. The administration of thioacetamide, within two days, leads to a predominance of nuclei of the third class and the appearance of sizable number of nuclei of a fourth class having double the volume of the third class. The effect is shown to be at least partially reversible on withdrawal of the thioacetamide from the diet. Disappearance of basophilic material, probably ribonucleoprotein in nature, from the cytoplasm of the affected cells and its reappearance on withdrawal of the thioacetamide accompanies the nuclear changes. The theoretical consequences of these findings, their similarity to changes described in livers regenerating after partial hepatectomy and in the early induction stage of p-dimethylaminoazobenzene hepatoma, and a possible mechanism through which the thioacetamide exerts its effect, are discussed.

HEMINGWAY, A. (1950.) A method of chemical analysis of guinea pig lung for the factors involved in pulmonary edema.—*J. Lab. clin. Med.* 35. 817–822. [Author's summary slightly modified.] 2103

A method has been devised for the quantita-

tive analysis of the lungs of guinea pigs by a determination of quantities which change significantly when lungs become edematous. The quantities measured include (a) lung weight, (b) lung density, (c) insoluble protein nitrogen of the lung, i.e. nitrogen of insoluble parenchyma, (d) pulmonary hemoglobin, and (e) soluble (non-hemoglobin) protein nitrogen. Values are given for the analysis of ten normal guinea pig lungs.

HUDSON, A. L. (1951.) The H-ion concentration of normal and diseased skin.—*Canad. med. Ass. J.* 64. 19–22. [Abst. from author's summary.] 2104

See also absts. 2163 (dissemination of infectious diseases by water); 2211 (book, sheep diseases).

POISONS AND POISONING

VENKATARAMANAN, K. & KRISHNASWAMY, N. (1949.) The amelioration of symptoms of fluorosis by aluminium salts.—*Indian. J. med. Res.* 37. 277–282. [Authors' summary copied verbatim.] 2105

This work has confirmed the ameliorating effect of aluminium salts in fluorosis induced in albino rats and has shown that the skeletal storage of fluorine is appreciably reduced by the presence of aluminium in the diet.

WESTERMARCK, H. (1946.) Tallium-myrkytysistä kotieläimissäme. [Thallium poisoning in domestic animals.—*Suom. Eläinlääkäri.* 52. 416–420. [Abst. from Swedish summary.] 2106

A clinical account of thallium poisoning in dogs, fowls and cattle that had eaten poisoned bait set out for rodent destruction.—F. E. W.

AASER, C. S. (1946.) En rettssak om "Kleggolje". [A law case on "Kleggolje" (pyroleum animale crudum, a crude distillation product from hooves, horns, bones, hides, etc.)]—*Norsk VetTidsskr.* 58. 94–100. 2107

This product (which is imported prepared ready for use) is commonly used in parts of Norway as a tabanid repellent and is described also in Germany under the name of "Oleum animale foetidum". It was applied by a farmer to two adult horses over the entire body on a hot summer day, a total amount of 250 ml. being used. This was stated to be considerably more than is ordinarily used. Both horses died, apparently following absorption of the product through the skin. [No details given about illness.] The owner sued the vendor but lost his case.—F. E. W.

MENZANI, C. (1949.) La malattia di Düren o malattia del Brabante. (Intossicazione da tri-

The surface pH of the skin is changed by certain environmental conditions and/or agents and by disease. Soaps increase the pH for relatively long periods and thus may initiate reactions to industrial irritants or to allergenic materials, and soaps prolong or aggravate dermatitis resulting from an irritant or allergy. Increase in the pH may lower the threshold for pathogenic fungi or bacteria.

A knowledge of the pH of commonly used local medications and detergents should be useful when attempting to adjust the skin pH to its normal value.

cloroetilene) (Nota preliminare). [Preliminary note on Düren disease or Brabant disease (trichloroethylene poisoning.)]—*Atti Soc. ital. Sci. vet.* 3. pp. 493–499. [English, French & German summaries.] 2108

M. discussed poisoning of dairy cows by trichloroethylene, used for the extraction of fat from soya beans, residues of which are retained in the meal used for animal food. He studied four such occurrences in 1948 in Italy where on one occasion 64 cows and 12 heifers died. The condition set in about 30 days after supplements of soya bean meal were first given; body temperature of up to 42° C. was recorded. M. reproduced the condition in cattle and g. pigs by feeding them on a diet supplemented with affected soya bean meal and by administration of trichloroethylene [details not given].—E. G.

KONST, H. & PLUMMER, P. J. G. (1950.) Acute and chronic toxicity of parathion to warm-blooded animals.—*Canad. J. comp. Med.* 14. 90–108. [Abst. from authors' summary.] 2109

The toxicology of parathion [*o*-diethyl *o*-p-nitrophenyl thiophosphate] was investigated in five species of laboratory and two species of domestic animals.

The acute oral toxicity for laboratory animals varied somewhat according to species and the purity of the sample of material or analogue tested; rabbits appeared most resistant, followed by male mice, male rats and g. pigs in the order given. Female rats had an exceptionally low tolerance; that of fowls appeared to be slightly higher. In general higher toxic values were obtained with Thiophos Parathion and the purified technical grade.

A wide range of individual susceptibility, especially pronounced in rabbits, mice and rats, made it difficult to establish an absolute mean

lethal dose of the various compounds. Under the conditions of the experiments the rate of skin absorption and toxicity in rabbits appeared to be greater when applied as a wash than when given *per os*. On the basis of body weight, sheep and pigs had only slightly greater resistance to oral administration or its use as a wash than the laboratory animals with the exception of the highly sensitive female rat. In long-term feeding trials a 100 p.p.m. food mixture was toxic to rats and mice. Feeding of garden and field crops that had been given normal treatment for the control of insect pests, relatively little parathion remaining, gave uniformly negative results. There appeared to be slight cumulative action of the chemical after daily ingestion or repeated application to the skin of sublethal doses.

The absence of lesions in animals showing toxic effects was noteworthy.

FORENBACHER, S. (1948.) Trovanje konja preslicom. [Equisetum poisoning of horses.] —*Vet. Arhiv.* 18. 193–196. [English and Russian summaries. Abst. from English summary.] 2110

A brief preliminary report of a three-year study following the first reported case of equisetum poisoning in the Zagreb district of Yugoslavia. In feeding tests on unspecified numbers of horses using hay containing various quantities of *Equisetum arvense* and *E. palustre*, those fed exclusively on heavily contaminated hay developed nervous symptoms which ended in death. P.M. examination revealed hyperaemia and an oedematous infiltration of the spinal cord and of the cerebrum. Histological studies were not yet completed.

One horse which recovered from acute poisoning was left with hemiplegia of the larynx. F. cured some severe cases by merely changing the diet. Dried yeast given *per os* hastened recovery, which in untreated cases took two or more weeks.

DOUGHERTY, R. W. & CELLO, R. M. (1949.) Study of toxic factors in the rumen ingesta of cows and sheep. —*Cornell. Vet.* 39. 403–413. 2111

It has been suggested that the symptoms of acute indigestion and bloät might be due to toxic substances arising in the rumen. Samples of ingesta from normal and atonic rumens of sheep and cows were, therefore, tested for toxicity, using the fluid obtained after centrifuging the samples. Fluid from normal sheep and cow ingesta produced variable results on isolated rabbit ileum, inhibited somewhat rumen motility of sheep and lowered the blood pressure

of dogs. Fluid from cows with acute indigestion had similar but much more marked effects and caused the death of experimental dogs. The toxic factor was not HCN nor did its action on the ileum resemble that of histamine. It appeared to be heat stable, non-volatile and dialyzable through a cellophane membrane.

—J. A. NICHOLSON.

McKENNA, C. T. & ORCHARD, H. E. (1949.) Heliotrope poisoning in sheep. —*J. Dep. Agric. S. Aust.* 52. 436–437. 2112

Attention is drawn to the recent finding that the plant *Heliotropium europaeum* is toxic to sheep. The symptoms of the poisoning, which are usually slow in developing, are described. The plant grows in the summer and is grazed from December to April. The toxic effects do not usually become apparent until the following June or July. One outbreak of acute poisoning caused by this plant is described. A description of the plant and notes on its distribution in South Australia are given. —D. F. STEWART.

KEAST, J. C. (1949.) Heliotrope poisoning in sheep. —*Yearb. Inst. Insp. Stk, N.S.W.* 1949. pp. 40–41. 2113

Many losses among sheep previously attributed to toxæmic jaundice have been caused by poisoning with *Heliotropium europaeum* [see preceding abst.]. British breeds and their crosses appear to be more susceptible. The plant is usually eaten during summer and early autumn but deaths do not usually occur until late winter. There are acute and chronic cases—some sheep may be affected for some months before they die. There may or may not be icterus; (in 20–80% there is clinical jaundice). Many of the jaundiced cases are of the non-haemolytic type.

P.M. findings vary from the typical haemolytic jaundice to cases in which jaundice is absent. The liver varies between a khaki and an orange colour, is often enlarged and sometimes fatty. In chronic cases, with wasting, the liver is shrunken, fibrosed and “hob-nailed”. Enteritis of both large and small intestines is fairly common and at times there may be free blood in the lumen. —H. McL. GORDON.

LAGNEAU, F. (1947.) Intoxication des animaux domestiques par la rhubarbe. [Poisoning of domestic animals by rhubarb.] —*Rec. Méd. vét.* 123. 410–412. 2114

A goat gave birth to three kids, one being born dead and the others weakly. The dam developed paralysis four days later and was given calcium therapy. The goat had eaten rhubarb leaves some days before delivery and L. surmises

that the rhubarb may have been responsible for the condition of the dam and kids, without, however providing any evidence.

Mention is also made of the deaths of seven cats which had formed the habit of sleeping under the leaves and eating part of the rhubarb. Prior to death, symptoms of marked digestive disturbance, followed by paralysis of the hind quarters, were noted.—H. PAVER.

PHILPOT, V. B. & SMITH, R. G. (1950.) **Neutralization of pit viper venom by king snake serum.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 521–523.

See also absts. 2157 (effect of parathion on dairy cows); 2211 (book, sheep diseases).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease.)

SCHILD, H. O., FITZPATRICK, R. J. & NIXON, W. C. W. (1951.) **Activity of the human cervix and corpus uteri. Their response to drugs in early pregnancy.**—*Lancet.* **260.** 250–253. [Authors' summary copied *verbatim*.] **2116**

The actions of drugs on the cervix and corpus of the human uterus in early pregnancy have been studied with a special cannula recording intra-uterine and intracervical pressures concurrently. The cervix of the human uterus can contract, sometimes independently of the corpus; the contractions of the cervix may be influenced by drugs. Intravenous injections of oxytocin produced contractions of the corpus even in the earliest stages of pregnancy, but the reactivity of the corpus to oxytocin increased after the first trimester. The cervix did not react consistently to oxytocin; in some experiments the cervix was contracted by oxytocin, in others it did not respond, and in yet others it apparently relaxed.

The most characteristic effect of the drugs of the ergometrine [an alkaloid derived from ergot] series was a stimulation of cervical contractions with or without corresponding stimulation of the corpus.

Vasopressin [the pressor principle of the posterior pituitary] powerfully stimulated the corpus. Its activity in this respect was equal to or slightly less than that of oxytocin in the first trimester, and 1½ to 2 times greater than that of oxytocin in the second trimester.

DELORME, E. J. (1951.) **Arterial perfusion of the liver in shock. An experimental study.**—*Lancet.* **260.** 259–263. [Author's summary copied *verbatim*.] **2117**

[Authors' summary slightly modified.] **2115**

Normal serum from the king snake [*Lampropeltis getulus*] detoxicated by heating, and in doses well below toxic levels protected white mice against as much as 7 LD₅₀ of moccasin [*Agkistrodon piscivorus*] venom injected intraperitoneally, when serum and venom were mixed *in vitro* or injected separately. A protective action against rattlesnake [*Crotalus adamanteus*] venom was also demonstrated. Wyeth's polyvalent antivenin used by the same technic showed a definitely lower degree of neutralizing potency against both moccasin and rattlesnake venoms.

Experiments were made on 30 dogs in which arterial blood, venous blood, and oxygenated venous blood were auto-perfused into the liver while the animals were maintained at a fixed level of hypotension. Responses of these dogs were compared to those of controls similarly prepared but perfused through a systemic vein.

The dogs receiving supplementary oxygen by way of the portal vein invariably showed an increased resistance to hypotension. The mean survival time was at least twice that of the control group, and loss of vascular tone developed to a lesser degree and more slowly. Dogs perfused with venous blood into the liver showed a response in both survival time and rate of vascular collapse similar to that of controls perfused with arterial blood through a systemic vein. Dogs whose livers were perfused with venous blood artificially reoxygenated showed the greatest resistance of any group. These findings are in agreement with the view that a gradient loss of liver function occurs under anoxic conditions and that peripheral vascular responses are directly or indirectly influenced by this failure.

STEIN, I. F., Jr. & MEYER, C. F. (1949.) **Effect of urecholine on the stomach intestine and urinary bladder.**—*J. Amer. med. Ass.* **140.** 522–525. [Authors' summary and conclusions copied *verbatim*.] **2118**

Urecholine (urethane of beta methyl-choline chloride) is a potent parasympathomimetic drug with relatively low toxicity and no serious side effect. It causes an increase in gastric motility in both the normally innervated and in the vagotomized stomach. It causes an increase in intestinal motility and is of definite value in the treatment of adynamic ileus. Urecholine causes

contraction of the normally innervated bladder as well as the cord bladder [paralysis of bladder as a result of spinal cord injury.—Ed. V.B.] and is of considerable therapeutic value in the treatment of post-operative urinary retention. The value of urecholine in the treatment of cord bladder is yet to be determined.

DUNCAN, G. G., CLANCY, C. F., WOLGAMOT, J. R. & BEIDLEMAN, B. (1951.) **Neomycin: results of clinical use in ten cases.**—*J. Amer. med. Ass.* **145.** 75–80. [Abst. from authors' summary.] **2119**

It has been shown that a wide variety of pathogenic organisms insensitive to antibiotics in current use were sensitive to neomycin *in vitro*.

KLEIN, M., SCHORR, S. E., TASHMAN, S. & HUNT, A. D., Jr. (1950.) **Evaluation of oral, intravenous, and intramuscular aureomycin and the correlation between the *in vivo* and *in vitro* activity.**—*J. Bact.* **60.** 159–169. [Authors' summary copied *verbatim*.] **2120**

A single injection of 1 mg of aureomycin intramuscularly is far more effective than 1 mg of penicillin intramuscularly in the treatment of a type 1 pneumococcus infection in mice. These results are related to the observation that penicillin given intramuscularly is quickly adsorbed from the site of injection and rapidly excreted. Intramuscular aureomycin, on the other hand, is slowly released from the site of injection with the maintenance of a prolonged therapeutic blood level. No prolonged effect is obtained with large oral or intravenous injections of aureomycin.

A comparison of the therapeutic effect of oral and intramuscular aureomycin in the treatment of pneumococcus infections in mice indicated that on a weight basis the intramuscular route is approximately 10 times as effective as the oral route. The very high initial blood levels obtained after intravenous injection of aureomycin did not increase the rate of destruction of the pneumococci over that obtained with lower blood levels.

The concentration of aureomycin required to inhibit growth *in vitro* of a type 1 pneumococcus after 18 hours' incubation at 37° C is 5 to 10 times greater than the concentration required to inhibit growth *in vivo*.

JACOX, R. F. (1950.) **The activating effect of calcium on a bactericidal substance for *Bacillus subtilis* in human serum.**—*J. exp. Med.* **92.** 101–111. [Author's summary copied *verbatim*.] **2121**

An enhanced bactericidal activity of human serum for *B. subtilis* develops during many different forms of illness, e.g. carcinoma, virus

and bacterial infections, and during acute coronary occlusion.

This increased bactericidal effect cannot be related to leucocytosis, fever, serum complement, C-reactive protein, or a specific antibody reaction.

The serum bactericidal factor becomes inactive in decalcified serum, but active again when optimal concentrations of calcium are added. Magnesium does not cause reactivation.

WHITFIELD, A. G. W., ARNOTT, W. M. & WATERHOUSE, J. A. H. (1951.) **Effect of aminophylline in emphysema.**—*Lancet.* **260.** 490–492. [Authors' summary copied *verbatim*.] **2122**

The lung volume has been determined, and tidal-air tracings made, before and after the oral administration of aminophylline, in 6 normal subjects and in 12 patients suffering from emphysema without bronchospasm.

The drug did not change the lung volume or spiropgraphic pattern of the normal subjects.

A slight reduction in the total lung volume, functional residual air, and residual air followed administration of the drug in cases of emphysema examined in the sitting posture, but no change in lung volume was apparent in recumbency.

The tidal-air tracings of the emphysematous group were unaltered by the drug.

No reason was found to suppose that aminophylline, in the absence of bronchospasm, has any place in the treatment of emphysema.

OBEL, N. J. & SCHMITERLÖW, C. G. (1948.) **The action of histamine and other drugs on the bronchial tone in horses suffering from alveolar emphysema [heaves].**—*Acta pharmacol.* **4.** pp. 71–80. [In English.] **2123**

Recording of intrathoracic pressure changes in horses revealed that injection of histamine caused marked broncho-constriction in animals with "broken wind" (emphysema), greatly in excess of that in normal horses. Even when an animal had recovered from a recent attack, histamine produced broncho-constriction, and relaxation of the bronchi with atropine did not nullify the effect of injected histamine. It is suggested that a sensitization towards mouldy hay may be the cause of the histamine sensitivity in "broken wind".—R. MARSHALL.

I. CORDIER, D. & CORDIER, G. (1948.) **Effet des injections préventives d'histamine sur le développement de l'œdème pulmonaire expérimental chez le cobaye. [Histamine and the prevention of experimental pulmonary oedema in g. pigs.]**—*C. R. Soc. Biol. Paris.* **142.** 968–970. **2124**

II. CORDIER, D. & CORDIER, G. (1948.) Emploi de l'histaminase dans la prévention et la thérapeutique de l'oedème pulmonaire expérimental chez le cobaye. [Histaminase in the prevention and cure of pulmonary oedema in g. pigs.]—*Ibid.* 971-972. 2125

I. It was thought possible that if histamine was concerned in the mechanism of phosgene poisoning in g. pigs, their resistance to this poison might be raised by previous repeated injections of histamine, as it has been reported that such injections will raise their resistance to subsequent injections of histamine itself. In an experiment, it was found that the resistance of g. pigs was somewhat, but not markedly, raised by previous injections of histamine (10 out of 24 treated, and 4 out of 24 untreated animals surviving), suggesting that histamine does not play a predominant role in phosgene poisoning in the g. pig. Further, the susceptibility of the species to histamine and to phosgene poisoning does not run parallel.

II. Histaminase injected into g. pigs before and/or immediately after exposure to phosgene had no effect on the development of fatal pulmonary oedema.—E. COTCHIN.

CARLISLE, J. M. (1950.) Cortisone (compound E). Summary of its clinical uses.—*Brit. med. J.* Sept. 9th. 590-595. 2126

C. discussed cortisone (compound E) under various headings, summarizing the main points of interest of the substance including its isolation, synthesis, structure of the molecule, metabolic effect, general physiological or hormonal effects, clinical effects in rheumatoid arthritis and in acute rheumatic fever, response in other diseases, dosage and theories of mechanical action. There are two tables (i) listing various diseases and their response to cortisone and (ii) giving certain known (or probable) effects of cortisone.

—E. M. J.

RICH, A. R., BERTHRONG, M. & BENNETT, I. L., Jr. (1950.) The effect of cortisone upon the experimental cardiovascular and renal lesions produced by anaphylactic hypersensitivity.—*Johns Hopk. Hosp. Bull.* 87. 549-564. [Authors' summary copied *verbatim*.] 2127

Forty rabbits were sensitized with horse serum in the manner known to favor the development of periarteritis nodosa, cardiac inflammatory lesions and acute glomerulonephritis. Half were treated with cortisone, the remainder serving as controls.

Well marked vascular or cardiac lesions or both developed in 17 of the 20 control animals, and in only 4 of the 20 cortisone-treated animals. This conforms with our previous observations

on the inhibitory effect of ACTH upon the development of the cardiovascular lesions of hypersensitivity.

Sensitization by the procedure used in these experiments produced acute diffuse glomerulonephritis with the cellular proliferation of the glomerular tufts that is characteristic of most cases of human acute glomerulonephritis. Both cortisone and ACTH inhibited the development of this proliferative glomerular lesion, but whereas effective treatment with ACTH maintained the glomeruli in a normal state, treatment with cortisone induced the development of a quite different type of severe glomerular damage with accentuated hemorrhage, which has its counterpart in some cases of human acute hemorrhagic glomerulonephritis.

In many of the cortisone treated animals there was a massive deposition of glycogen in the liver, fat droplets in the liver cells lipemia, and conspicuous extra-medullary blood formation in the spleen.

CREVIER, M., D'IORIO, A. & ROBILLARD, E. (1950.) Influence des glandes sexuelles sur la désintoxication du pentobarbital par le foie. [Influence of the sex glands on detoxication of pentobarbital by the liver.]—*Rev. Canad. Biol.* 9. 336-343. [English summary copied *verbatim*.] 2128

The greater resistance of males to pentobarbital anesthesia is caused by a rapid detoxication of this substance, in the liver, testosterone accelerating this destruction. The lower resistance of females corresponds to a slower detoxication of pentobarbital by the liver, estradiol slowing this destruction.

KEMPER, H. (1949.) Schädlingbekämpfung. [Parasiticides and control of animal pests.]—*Zbl. Bakt. I. (Orig.)* 153. 217-231. 2129

D.D.T. in a liquid base was found to be more efficacious than in powder form against lice in man.

Rats were a menace during and after the late war, and in Berlin squill preparations were advised, but squill was not readily available and was not without probable danger when used on a large scale by laymen. Instead, zinc phosphide paste was mainly used, also a thallium preparation, and, in some cases, barium carbonate. Reference was made to the preparations antu (α -naphthylaminethiourea) and "muritan".

—M. L. CLARKE.

CHAMBERLAIN, R. W. (1950.) An investigation on the action of piperonyl butoxide with pyrethrum.—*Amer. J. Hyg.* 52. 153-183. [Abst. from author's summary.] 2130

This report is concerned with an investigation of the hypothesis that piperonyl butoxide "activates" the pyrethrin esters by inhibiting lipase, an enzyme capable of detoxifying them by hydrolysis.

Within the temperature range of 15 to 25 C, houseflies placed in contact with a pyrethrin residue underwent a more rapid knockdown at the lower temperatures. This finding defends the view that enzymic detoxication of pyrethrins occurs, as enzymes are less active at reduced temperatures. Temperature appeared to have little effect on the rate of knockdown among specimens exposed to a residue of mixed piperonyl butoxide and pyrethrins, thereby lending support to the hypothesis of this thesis. Details of tests are given.

In tests with a number of pyrethrum synergists, it was shown that there was no apparent correlation between the efficacy of these compounds as lipase inhibitors and as pyrethrum synergists, for some of the poorest synergists were the best inhibitors.

The possible significance of the experimental findings in regard to the hypothesis that piperonyl butoxide acts to inhibit lipase is discussed. The results, although somewhat inconclusive, lend support to this hypothesis. The need is indicated for further work to reveal whether tests *in vitro* give a reliable picture of what actually occurs in the living insect.

SALTON, M. R. J. (1950.) **The bactericidal properties of certain cationic detergents.**—*Aust. J. Sci. Res. Ser. B.* 3, 45–60. [Author's summary copied *verbatim*.] 2131

See also *absts.* 1905–1906 (antibiotics and anatoxin in staphylococcal infections); 1908 (chloramphenicol and sulphone in mastitis); 1910 (*Str. aranson* infection in mice and penicillin); 1923 (resistance of tubercle bacilli to streptomycin); 1934 (action of antibiotics on strains of *Past. multocida*); 1935 (chloramphenicol); 1957 (sensitivity to penicillin and sulphanilamide of *Clostridium carnis* cultures); 1959 (sulphamethazine in swine pneumonia); 1964 (aureomycin hydrochloride in actinomycosis); 1965 (effect of chloromycetin on actinomycetes *in vitro*); 1974 (canine leptospirosis); 1984 (trypanflavine in surra); 1987–1988 (antricyde and dimidium bromide); 1989 ("melarsen") trypanamide and amidines in trypanosomiasis); 1991 (antiseptics in trichomoniasis); 1992 (phenylhydrazine hydrochloride in *Plasmodium knowlesi* infection in monkeys); 2014 (equine encephalomyelitis); 2023–2024 (effect of antibiotics on agents of psittacosis-lymphogranuloma group); 2026 (antibiotics against mouse pneumonia caused by feline pneumonitis virus); 2049 (sulphonamides and parasitic infestation); 2052 (insecticides); 2053–2054 (D.D.T.); 2055 (SK-9 parasiticide); 2063 (anthelmintics); 2065 and 2067 (caricide); 2068 (hetrazan); 2071 (potassium iodide in fowl paralysis); 2073 (radioactive phosphorus); 2074 (chemotherapy of cancer); 2075–2076 (effect of chemotherapeutics on tumours); 2095 (oedema disease of pigs); 2146 (effect of adrenalin on eosinophile count, uric acid and creatinine excretion); 2162 (rodenticide); 2167 (oestradiol benzoate); 2168 (α -tocopherol); 2183 (water soluble fungicides); 2213–2214 (pharmacopoeias).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

SCHLOERB, P. R., FRÜS-HANSEN, B. J., EDELMAN, I. S., SOLOMAN, A. K. & MOORE, F. D. (1950.) **The measurement of total body water in the human subject by deuterium oxide dilution with a consideration of the dynamics of deuterium distribution.**—*J. Clin. Invest.* 29, 1296–1310. [Authors' summary copied *verbatim*.] 2132

Analysis of the serum deuterium oxide concentration by a double vacuum distillation and densimetric determination with the falling drop apparatus proved to be a precise analytic pro-

cedure and checked well with duplicate determinations done on the mass spectrometer. Using the F.D.A. [Food and Drug Administration] method of testing germicides, the bactericidal properties of two cationic detergents, "Cetavlon" [cetyltrimethyl ammonium bromide] and "Fixanol C," [cetylpyridinium bromide] were tested against ten organisms at seven pH levels between 5.2 and 8.2. The results for the two detergents were similar. Gram-positive organisms were more susceptible than Gram-negative. There was considerable variation in the relationship between susceptibility and pH. *Staph. aureus*, *Staph. albus*, *Strep. faecalis*, and *Proteus vulgaris* were all most susceptible under slightly alkaline conditions; whereas *Ps. fluorescens*, *Ps. pyocyanea*, *Achromobacter liquefaciens*, and *Bacterium coli* were most susceptible under slightly acid conditions. The susceptibility of *Corynebacterium equi* was unaffected by pH within the range studied.

One strain each of *Staph. aureus* and of *Ps. fluorescens* were studied in more detail. Plate count disinfection studies confirmed the greater rate of destruction of *Staph. aureus* at pH 8.1, and of *Ps. fluorescens* at pH 5.3. Neither of two anionic detergents reversed the bactericidal action of "Cetavlon". For both types of cells the adsorption of detergent was greatest at pH 8.2. Likewise the inhibition of oxygen uptake showed no marked relationship with mortality. Treatment with detergent caused an increased loss of phosphorus-bearing compounds from both types of cells, but the data are insufficient to show whether susceptibility to the detergent was related to this leakage from the cells.

cedure and checked well with duplicate determinations done on the mass spectrometer.

Total body water was determined by deuterium oxide dilution in 17 normal male subjects with a range of 55.9% to 70.2% and an average value of 61.8% of body weight. Eleven normal females ranged from 45.6% to 59.9% with an average of 51.9%, or 9.9% less than the males. These total body water figures have a precision of ± 800 cc or $\pm 2\%$ of total body water in a normal adult. Of the physical indices

studied total body water was correlated most closely with surface area and oxygen consumption. After intravenous injection of D_2O , equilibrium in body water as measured by venous blood serum is attained within two hours. The dynamics of deuterium equilibrium, involving intravenous, oral and subcutaneous administration and a study of the early arteriovenous deuterium differences is described. The half-time for heavy water in the adult human body is 9.3 ± 1.5 days. Preliminary results from the study of deuterium oxide equilibration by analysis of arterial blood samples soon after intravenous injection of heavy water consistently revealed a double exponential curve.

HOFFMAN-OSTENHOF, O. (1950.) Zur Einteilung und Nomenklatur der übertragenden Enzyme. 2. Mitteilung über Nomenklatur und Systematik der Enzyme. [A nomenclature of transferring enzymes.]—*Enzymologia*. 14. 72–82. [In German. Abst. from English summary.] 2133

A rational nomenclature for the second main group of enzymes, the transferring enzymes, is proposed in this paper. Enzymes which transfer hydrogen or electrons directly to molecular oxygen should be called oxidases as is customary at present. Electron transferring enzymes should be called electron-transportases. All other transferring enzymes should be characterized by putting the prefix "trans" in front of the name of the atom group which the enzyme transfers: e.g. transhydrogenases, transphosphatases, transaminases, etc.

In order to characterize the specificity in respect of the substrate of the different enzymes, it is proposed to prefix the name of the enzyme by the 2 substrates naming first the donator and then the acceptor. Although the proposed nomenclature has the disadvantage that the names so formed are in many cases longer than the designations and trivial names at present used, it offers the possibility of classifying every enzyme of this main group, the substrate specificity of which is sufficiently known in an unambiguous manner.

Finally it is proposed to follow a suggestion by LIPMANN, to distinguish those enzyme systems which are composed of several single enzymes from the simple enzymes by adding the word "system" to the name of the composite enzyme: e.g. zymase-system, cyclophorase-system, succino-oxydase-system, etc.

FOULKES, E. C. & LEMBERG, R. (1949.) The formation of choleglobin and the role of catalase in the erythrocyte.—*Proc. Roy. Soc.* 136.

Ser. B. 435–448. [Authors' summary copied verbatim.] 2134

In haemolysates of non-nucleated erythrocytes there is an inverse proportion between catalase activity and rate of choleglobin formation on addition of ascorbic acid. In the intact erythrocytes catalase protects haemoglobin against oxidation and further destruction by the hydrogen peroxide generated by the D-amino acid oxidase system or by physiological concentrations of ascorbic acid and glutathione. Acid destromatization of haemolyzed horse erythrocytes causes a small decrease in the catalase activity and an increased rate of inactivation of the remaining catalase by ascorbic acid. The liberation of copper from haemocuprein is quantitatively insufficient to explain the decreased stability of the catalase. Exposing duck oxyhaemoglobin, but not reduced haemoglobin, to a pH of 5.5 to 5.8, causes an alteration which is apparent from the increase of the rate of choleglobin formation. The mechanism of this alteration is discussed. It partly explains the "stroma effect", at least in duck erythrocytes. In addition, in the latter, there is a true stroma effect. Choleglobin formation in the presence of ascorbic acid is accelerated by a variety of substances. Some of these perturb haemoglobin, while others increase the formation of hydrogen peroxide from ascorbic acid. The implications of our findings on the mechanism of choleglobin formation and on the role of catalase in the erythrocyte are discussed.

FRIEDMANN, R. (1949.) Enzymic inactivation of serum gonadotrophin. [Correspondence.]—*Nature, Lond.* 164. 626–627. 2135

Experiments are described which corroborate Whitten's findings [*V.B.* 20. 168] that *Clostridium welchii* filtrates contain a substance or substances, other than the A-splitting enzyme, the depolymerase of Stack and Morgan and the proteolytic λ -antigen, which are capable of destroying the gonadotrophic activity of pregnant mares' serum within 30 min.—A. T. C.

WHITTLESTON, W. G. (1950.) Nature of the milk-ejection process. [Correspondence.]—*Nature, Lond.* 166. 994 2136

Experiments with a highly purified preparation of oxytocin indicated that in the lactating sow, the substance had a milk-ejecting potency equal to its oxytocic activity. It would seem that the hormone causes contraction of the myoepithelium round the mammary alveoli so increasing the pressure within them and also causes opening of the small ducts by tightening the longitudinal myoepithelial structures sur-

rounding them. The "let-down" hormone would therefore appear to be oxytocin but it raises the question as to why commercial preparations of pressor hormone with a stated oxytocic content of less than 5% should have a milk-ejecting activity of about five times their oxytocic activity.—J. A. NICHOLSON.

WILKINSON, A. W., BILLING, B. H., NAGY, G. & STEWART, C. P. (1951.) **Changes in blood chemistry after surgical operations.**—*Lancet*. 260. 315–318. [Authors' summary copied verbatim.] 2137

Changes in the composition and volume of the blood after severe surgical operations followed a general pattern which was independent of the type of operation or the method of postoperative feeding.

In all the patients there was a sudden fall in the plasma-protein, in particular the albumin concentration. In most cases the globulin concentration gradually rose to values well above the preoperative levels.

Increases in amount of non-protein (urea) nitrogen were observed in some patients.

Haemoconcentration on the day after operation, followed by haemodilution, was observed in all patients. Changes in haematocrit values were accompanied by corresponding changes in red-cell count.

An immediate reduction in total blood-chloride with an inconstant reduction in plasma-chloride was followed in most patients by a rise in total blood-chloride. There were corresponding changes in the serum-sodium. There was some evidence that electrolyte ions were transferred from the plasma to the red cells.

On the day after operation there was a significant reduction in plasma and blood volume, and in the total amounts of proteins and sodium circulating in the plasma, but no significant change in the "thiocyanate space."

The relation of the blood changes observed to the periods of salt retention and protein katabolism after operation is discussed.

HANSEN, M. F., TODD, A. C., KELLEY, G. W. & CAWEIN, M. (1951.) **Studies on the hematology of the Thoroughbred horse. IV. Barren mares.**—*Amer. J. vet. Res.* 12. 31–34. [Authors' summary copied verbatim.] 2138

A study of the blood picture of 70 healthy Thoroughbred barren mares revealed the following average blood values and their standard errors: erythrocytes, 9.94 ± 0.108 million per cubic millimeter; hemoglobin, 13.83 ± 0.131 Gm. per 100 ml. of blood; packed volume of erythrocytes, 43.05 ± 0.405 per cent; leucocytes, 10.37

± 0.200 thousand per cubic millimeter; mean corpuscular volume, 43.17 ± 0.293 cubic microns; and a mean corpuscular hemoglobin concentration of 32.10 ± 0.149 per cent.

The differential leucocyte counts showed the following mean percentages and standard errors: neutrophils, 48.2 ± 0.914 ; lymphocytes, 44.5 ± 1.040 ; monocytes, 1.7 ± 0.157 ; eosinophils, 4.6 ± 0.887 ; and basophils, 0.5 ± 0.029 .

The results of *chi-square* tests of agreement between the observed distributions and theoretic distributions of the blood values according to a normal curve, together with measurement of skewness, indicate that a normal cure of error is applicable to the distributions, with the possible exception of the mean corpuscular hemoglobin concentration.

BECKER, D. E. & SMITH, S. E. (1950.) **A chemical and morphological study of normal sheep blood.**—*Cornell Vet.* 40. 350–356. [Authors' summary slightly modified.] 2139

The normal values for hematocrit (packed red cell volume), hemoglobin, plasma protein, plasma inorganic phosphorus, and plasma calcium in sheep blood are 37.9 ± 0.36 per cent, 12.41 ± 0.13 gm. per 100 ml., 7.38 ± 0.08 gm. per 100 ml., 8.10 ± 0.79 mg. per 100 ml., and 11.57 ± 0.17 mg. per 100 ml., respectively. There were no significant differences among breeds or between sexes with regard to any of the blood characteristics. Age was noted to influence the level of plasma protein and plasma inorganic phosphorus. Plasma protein concentration increased with advancing age, whereas plasma inorganic phosphorus decreased with an increase in age. The latter blood character was also observed to decrease when the animals were changed from barn feeding to pasture.

The mean erythrocyte count for all sheep studied was 11.9 ± 1.2 million per cmm. The mean corpuscular values are also presented.

I. & II. EL HINDAWY, M. R. (1948.) **The studies on the blood of dogs. II. Haematological findings in (A) apparently healthy dogs harbouring intestinal parasites; (B) dogs infested with *Spirocerca sanguinolenta*. III. Haematological findings in some physiological states—(a) Pregnancy; (b) Post-partum and lactation.**—*Vet. J.* 104. 159–165; & 194–198. [For Part I, see *V.B.* 19. 687.] 2140

I. 154 dogs which were harbouring intestinal parasites of various species were divided into three groups, cestode infested, nematode infested and those with mixed infestation.

Erythrocyte, total leucocyte, reticulocyte and differential counts and haemoglobin estima-

tions were made; the results are recorded in a table for each group. There was a slight reduction in the erythrocyte count and in the haemoglobin level and in all cases eosinophilia was a constant feature in the nematode and mixed infestations. In the cestode infestation there was a slight fall in the total leucocyte count.

In what is presumed to be an account of the blood picture in *Spirocerca sanguinolenta* infestation, it is stated that there is a decrease in the erythrocyte count with a rise in haemoglobin and an increase in the reticulocyte count. [In no case is there any report of the application of statistical analysis to the figures recorded and it is possible that if this had been done the conclusions might have been different.]

II. Similar examinations to those recorded above were made on pregnant bitches with "mild or severe intestinal parasitic infestation". The author records that the blood changes were comparable to those resulting from helminth infestation.—J. A. J. VENN.

ELSDEN, S. R. & SYPESTEYN, A. K. (1950.) **The decarboxylation of succinic acid by washed suspensions of rumen bacteria.**—*J. gen. Microbiol.* 4. No. 3. p. xi. of Proceedings. [Only abst. given; abst. from abst.] 2141

An anaerobic, Gram-positive streptococcus has been isolated from the rumen of sheep. The organism ferments cellulose and cellobiose, succinic and acetic acids being the major end products. Succinic acid, however, is only present in the rumen in small amounts and it has been possible to prepare active suspensions of rumen bacteria which decompose succinic acid quantitatively to propionic acid and CO₂.

—J. A. NICHOLSON.

LEWIS, D. (1950.) **The reduction of nitrate by rumen bacteria.**—*J. gen. Microbiol.* 4. No. 3. pp. xi–xii. of Proceedings. 2142

It was found that 25g. of sodium nitrate introduced directly into the rumen of a sheep disappeared within ten hours with the formation of both nitrite and ammonia and the conversion of 60% of the blood haemoglobin to methaemoglobin. Nitrite added to the rumen was partly reduced to ammonia and partly absorbed, with the formation of methaemoglobin.

—J. A. NICHOLSON.

ZANDER, E. & WEDDELL, G. (1951.) **Observations on the innervation of the cornea.**—*J. Anat.* 85. 68–99. [Authors' summary copied verbatim.] 2143

A study of the innervation of the cornea in a selected series of vertebrates is presented.

A variety of histological methods was used to determine: (a) the general arrangement of the nerve fibres, (b) the structural details of these fibres and their terminations, and (c) their relationship to the tissues which surround them.

The observations are discussed in relation to: (a) the literature, (b) the neuron theory, (c) their functional significance.

TOHARA, S. (1950.) **[Radiographical studies on the ossification of leg-bones of horses.]**—*Jap. J. vet. Sci.* 12. 11–20. [Abst. from English summary.] 2144

T. found three types of ossification in the leg bones of the horse. In the humerus, radius, first phalanx, femur and tibia, ossification begins at the bone shaft and at the epiphyses. In the ulna, the accessory carpal, third metacarpal, second phalanx, fibular tarsal and third metatarsal bones there are only two centres of ossification, at the bone shaft and at one epiphysis. In the carpal bones, the second metacarpal, fourth metacarpal, second metatarsal and fourth metatarsal bones and in the fibula he found only one centre of ossification.

He found no centre of ossification at the foetal stage at the proximal end of the distal sesamoid bone, at the distal end of the first phalanx, at the proximal end of the third metacarpal or metatarsal bones, at the proximal end of the second metacarpal or metatarsal bones, nor at the proximal end of the fourth metacarpal or metatarsal bones, contrary to generally accepted opinion.

In almost all the bones ossification of the shaft appears in the third or fourth month of pregnancy; the centres of ossification at the ends of the long bones begin to appear in the eighth month and most of them are complete at birth. That of the distal epiphysis of the first phalanx is usually the earliest to be completed, at about the time of birth; those in the heads of the ulna and fibular tarsal appear last, and if they cannot be detected at birth it is a sign of poor foetal development.

The centre of ossification is complete in the distal sesamoid at the 4th–5th month; at the proximal epiphysis of the second phalanx in the 7th–8th month; at the distal epiphysis of the first phalanx at birth, and at the proximal epiphysis in the 9th–10th month; in the proximal sesamoids at the 10th–11th month, and at the distal epiphysis of the third metacarpal bone at the 17th–18th month.

In the leg bones the centres of ossification are completed symmetrically and simultaneously on both sides, those of the fore legs a little earlier than those of the hind legs.

BODINGBAUER, J. (1948.) Neues über den histologischen Bau der Zahnhartgewebe des Pferdes. [The histological structure of the hard dental tissues in the horse.]—*Mikroskopie*. 3. pp. 345–353. 2145

The arrangement of the different hard dental substances is shown by diagrams of simple wax models, and the histological structure of mandibular and maxillary molar teeth is described with the aid of photomicrographs.—E. COTCHIN.

BROCH, O. J., HAUGEN, H. N. (1950.) The effects of adrenaline on the number of circulating eosinophils and on the excretion of uric acid and creatinine.—*Acta endocrinol.* 5. 143–150. [In English. Abst. from authors' summary and conclusions.] 2146

In subjects with a healthy adrenal cortex ACTH produces a number of reactions, which include a decrease in the eosinophil content of the blood and an increase in the ratio between uric acid and creatinine excreted in the urine. A variation of at least 50% for both reactions is taken as evidence of normal adrenocortical function. An injection of adrenaline is also believed to be of value for the same test as it is supposed to stimulate the hypophysis to an increased production of ACTH.

The effects of adrenaline on the number of eosinophils and on the excretion of uric acid and creatinine, are altogether too variable to serve as a useful clinical test for the function of the adrenal cortex.

DAVIES, J. (1951.) Nephric development in the sheep with reference to the problem of the ruminant pronephros.—*J. Anat.* 85. 6–11. [Author's summary copied *verbatim*.] 2147

The development of the early excretory system has been studied in sheep embryos of 7, 11, 14, 23 and 29 somites.

A continuous 'nephric ridge' is developed from the 7th to approximately the 14th somite and in relation to a bulky and precociously vascular nephrogenic cord.

The Wolffian duct is separated from the dorsal part of the nephric ridge as a cord of cells which grows freely caudal to about the 14th somite to reach the cloaca about the 19-somite stage.

Excretory tubules of a simple type are developed in the nephric ridge and become related ventrally to a large glomerular complex lying approximately from the 7th to the 14th somites, and continues caudally with glomeruli of the usual vertebrate pattern.

The significance of these findings in relation to the problem of the mammalian pronephros is discussed. A pronephros in the accepted sense cannot be said to exist in the sheep.

The embryonic kidney becomes capable of function, as judged by the anatomical appearances, at a very early stage (23–29 somites, 16–17 days). This coincides with the expansion of the allantoic sac.

SWANN, H. G., MONTGOMERY, A. V., DAVIS, J. C., Jr. & MICKLE, E. R. (1950.) A method for rapid measurement of intrarenal and other tissue pressures.—*J. exp. Med.* 92. 625–636. [Authors' summary copied *verbatim*.] 2148

A rapid method for measuring tissue pressures has been designed. A pressure of 250 mm. Hg is imposed on a manometer. Then the system is allowed to discharge into a needle cannula inserted in the tissue. The manometer forces out fluid (about 10 c.mm.) until the pressure within it is the same as that within the tissue. Records of the pressure changes are made. Each observation takes about a minute. The method gives results that are closely comparable with other reports of tissue pressures. With this method, the pressure in the following organs of dogs was found to be: kidney, 26 mm. Hg, cerebral cortex, 0 to 5 mm., muscle, 1 to 10 mm., spleen, 5 to 16 mm., subcutaneous tissue, 0 to 3 mm., and liver —2 to 14 mm.

The reliability of the method was tested on the kidneys of decerebrate dogs. Measurements were found to be the same within narrow limits over a period of an hour; they were the same when taken simultaneously in different regions of the same kidney or in opposite kidneys. They were independent of the volume of fluid forced into the tissue. Similar pressures were observed with 1 or 5 or 10 holes bored in the shaft of the cannulating needle.

The intrarenal pressure was also measured by inserting a needle cannula into the tissue and then allowing the pressure to reach equilibrium passively with a manometer. This method gave similar results. The intrarenal pressure has now been found to be the same when measured by three different technics.

MONTGOMERY, A. V., DAVIS, J. C., Jr., PRINE, J. M. & SWANN, H. G. (1950.) The intrarenal pressure. Its relation to age, weight, blood pressure, and sex.—*J. exp. Med.* 92. 637–642. [Authors' summary copied *verbatim*.] 2149

The intrarenal pressure of dogs anesthetized with pentobarbital averages 26 mm. Hg, and ranges from 10 to 58 mm.; that of decerebrate dogs is 25 mm.; and that of unanesthetized dogs with explanted kidneys is 25 mm. Tests of a few cats and rabbits indicate that their intrarenal pressure has about the same magnitude. There is a slight positive correlation between intrarenal pressure and both body weight and kidney

weight, but intrarenal pressure is not related to sex, blood pressure, or age.

CLIFT, A. F., GLOVER, F. A. & BLAIR, G. W. S. (1950.) *Rheology of human cervical secretions. Effects of menstrual cycle and pregnancy.*—*Lancet*. 258. 1154–1155. 2150

Using a modification of the Scott Blair emptying and filling capillary-tube viscometer, the authors investigated secretions taken from 300 women attending the gynaecological and antenatal department of a large hospital; of these, 86 non-pregnant and 35 pregnant women were selected as being in normal physical condition. The average value of the slopes for all patients at the same adjusted date in the cycle was plotted against that date: there was one maximum about the 8th day, another about the 20th, and a minimum at the 14th. Changes in the physical properties of the secretions are governed by the hormones acting on the cervical glands, so that measurements of these properties may be correlated with hormone levels.

—W. R. BETT.

COMMON, R. H., KEEFE, T. J., BURGESS, R. & MAW, W. A. (1950.) *Modification of the biochemical responses of the immature pullet to oestrogen by means of dietary aureomycin.* [Correspondence.]—*Nature, Lond.* 166. 992–993. 2151

Four groups of six cross-bred pullets seven weeks old were placed in individual cages and fed an adequate diet. Group (1) was untreated; group (2) was given 20 mg. aureomycin hydrochloride per lb. of food; groups (3) and (4) were given oestrogen as follows:—six doses on alternate mornings of 1 mg. oestradiol benzoate and 0.5 mg. testosterone propionate; group (4) was given in addition aureomycin (20 mg. per lb. of food). Equal food consumption was maintained between the groups. Aureomycin enhanced the action of oestrogen on both serum calcium and serum riboflavin, but the ratio between the two was not apparently disturbed.

Aureomycin may act on the intestinal flora generally by reducing fixation and by neutralization of growth factors in the diet or by reducing production of substances which depress liver response to oestrogen. The addition of antibiotics to the diet may also modify the response of the pullet to endogenous oestrogens as well as those given parenterally.—GEORGE C. RAFFERTY.

LEECH, F. B. (1950.) *The galactopoietic effect of iodinated casein: dose response relationships during prolonged treatment.*—*J. Endocrinol.* 7. 42–53. [Author's summary copied verbatim.] 2152

In an experiment involving fifty-nine cows, the relative values were assessed of daily dosages of 15, 20 and 25 g. of iodinated casein incorporated in cattle cubes. Treatment was continued from 3 months after calving for 28 weeks, except on cows which went dry before this time. The expected increase in milk yield lasted for 8 weeks, after which the response to the two lower doses quickly disappeared. The response to 25 g. of iodinated casein was maintained at a reduced level throughout the period of treatment. The yield of butter fat reacted very similarly to milk yield. There was no effect on the proportions of butter fat or of non-fatty solids in the milk. Body weight was reduced by amounts proportional to the doses; this loss in weight gradually disappeared. After 12 weeks of treatment there was no significant difference between the groups. There was no significant effect on the health of the cows or on their reproductive activity.

WALTHARD, B. (1950.) *Funktionen der Nebennierenrinde, insbesondere der zona glomerulosa (Nebennierenrinde und Hautpigmentation). [Function of the adrenal cortex, particularly of the zona glomerulosa. Adrenal cortex and skin pigmentation.]—Acta endocrinol.* 5. 61–85. [In German. English summary, copied verbatim.] 2153

A survey is given of the part played by the adrenal cortex in the important metabolic processes which take place in the organism. The author reports several cases of selective atrophy and subsequent sclerosis of the glomerular zone of the adrenal cortex, a condition which is rarely diagnosed. This pathological condition is accompanied by a hyperpigmentation of the skin which varies in extent.

OVERBEEK, G. A. (1950.) *The ascorbic acid content of the pituitary gland in relation to stress and adrenalectomy.*—*Acta endocrinol.* 5. 151–156. [In English. Author's summary copied verbatim.] 2154

The ascorbic acid content of the pituitary gland of rats under conditions of acute corticotropic hypersensitivity (formalin stress, resp. 24 hours after adrenalectomy) appeared to remain unchanged.

MILLER, Z. B., DAVISON, C. & SMITH, P. K. (1950.) *The effect of podophyllotoxin, colchicine, urethane, and nitrogen mustard on the respiration of normal and suprarenalectomized rat lymphatic tissue.*—*J. exp. Med.* 92. 113–119. [Authors' summary copied verbatim.] 2155

The injection of podophyllotoxin, colchicine, and a nitrogen mustard derivative, methyl-bis (β -chloroethyl)amine, into normal animals causes a reduction of the respiration of the lymphatic tissues, spleen, and/or thymus. No effect was demonstrable on kidney, a representative tissue of non-lymphatic origin.

The degree of inhibition was considerably less in suprarenalectomized animals, suggesting that the inhibition is mediated by the suprarenal gland.

See also absts. 1924 (biochemistry of TB.); 1963 (biochemistry of *Aspergillus fumigatus*); 2048 (antigenic relationship of mammalian spermatozoa); 2218 (blood clotting and allied problems); 2219 (book, hormones); 2220 (book, sheep genetics).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

DAHME, P. A., FOUNTAINE, F. C., PANKASKIE, J. E., SMITH, R. C. & ATKESON, F. W. (1950.) The effects of feeding parathion to dairy cows.—*J. Dairy Sci.* 33. pp. 747–757. [Authors' summary slightly modified.] 2157

An experiment was designed to determine the presence or absence of parathion [*o*-diethyl-*o*, *p*-nitrophenyl thiophosphate, an insecticide] in the milk of dairy cows fed parathion in capsules. Ten dairy cows in heavy lactation, representing four of the major breeds, were allotted into two groups and fed a commercially available wettable powder formulation of parathion at levels of five ppm. and one ppm., based upon an estimated roughage dry matter intake of 2.25 lb. per 100 lb. of body weight daily, continuously for 81 days. These feeding levels represent an actual parathion intake of 0.112 mg. parathion per kg. body weight for the cows receiving five ppm. of parathion, and 0.022 mg. parathion per kg. body weight for those receiving one ppm. of parathion based upon the estimated roughage dry matter intake. At the conclusion of this experiment, two of these cows were fed increasing amounts of parathion up to 40 ppm. of the estimated roughage dry matter intake. In neither experiment was any parathion found in the milk of the experimental cows by the use of both a chemical method of analysis for parathion and biological assay using adult houseflies. No objectionable flavour was noted in the milk and no harmful effects to the health or reproductive ability of the cows were observed.

INGRAM, M. (1948.) Fatigue musculaire, pH et prolifération bactérienne dans la viande. [Relation of fatigue to pH and bacterial contamination of meat.]—*Ann. Inst. Pasteur.* 75. 139–146. 2158

Putrefaction of meat is more rapid when the animals have been slaughtered in a state of

RICHTER, C. P. (1950.) An ideal preparation for dissection of spinal, peripheral, and autonomic nerves of the rat.—*Science.* 112. 20–21. 2156

The dissection of the nervous system in rats is difficult because of the presence of large quantities of fat and opaque muscle tissue. The author describes a regimen for rats—exclusive feeding on glucose, alcohol and thiamine—on which rats live for about 40–60 days, by which time the fat has disappeared and the muscles are thin and transparent, the nerves being then easily dissected.—L. M. MARKSON.

fatigue than when rested before slaughter. Although true of all species, this is most marked in pigs which should have 72 hours' rest at the factory before slaughter. The thigh and the psoas muscles, those most liable to fatigue, are most affected. The amount of fatigue can be related to the pH or the electrical resistance, both of which are high in rested and low in fatigued muscles. The fundamental cause of low pH is the conversion of glycogen into lactic acid, which is removed by the circulation during life but accumulates after death. Resting allows glycogen to accumulate in the muscles, and the resting period can therefore be shortened by feeding sugar which speeds up glycogen accumulation. Once putrefaction has started it tends to increase rapidly as many bacteria produce an alkaline effect in the meat, thereby increasing its pH value and encouraging the growth of other bacteria. In meat having an alkaline reaction or high pH value the penetration of salt is checked and this condition must be avoided in bacon factories.—R. MACGREGOR.

GIBBONS, N. E. & ROSE, D. (1950.) Effect of ante-mortem treatment of pigs on the quality of Wiltshire bacon.—*Canad. J. Res. Sec. F.* 28. 438–450. [Authors' abstr. copied verbatim.] 2159

Meat from pigs slaughtered in a fatigued condition, as in present packing house procedures, had a lower glycogen reserve than meat from animals that had been fed and rested. Post-mortem breakdown of glycogen to lactic acid lowered the pH of meat from fed animals to approximately 5.3 while that from fatigued animals remained at about 6.0 or even as high as 6.6. Meat of low pH contained less sodium nitrite immediately after cure, and retained the desirable red color of cut lean surfaces much longer than did meat of high pH. Meat of low

pH was also less susceptible to spoilage by bacteria. Color differences were less apparent after the meat had been smoked, and the pre-slaughter treatment of the pigs is therefore of less importance in the production of smoked products. The quality of unsmoked Wiltshire sides, on the other hand, would be greatly improved by proper pre-slaughter handling of the pigs.

GÜNTHER, O. (1950.) Arbeitsanweisung für das "Kleine VE-Veterinär-Besteck" zur serologischen Typhus-Paratyphus-Enteritis-Diagnostik nach Dr. O. Günther. [A compact outfit for the serological diagnosis of salmonella infection at meat inspection.]—*Lebensmittelärzt.* 1. 122–127. 2160

The outfit consists of a small set of sera—3 O-sera, 11 H-sera and 2 sera for swarm plates—for use with the slide agglutination test.

Where the presence of a non-specific phase makes differential diagnosis by slide agglutination difficult, the inhibition of spreading on swarm plates is used.—A. MAYR-HARTING.

KÄSTLI, P. & BINZ, M. (1949.) Lebensfähigkeit von *Mycobacterium tuberculosis* in verschiedenen Käsesorten. [Viability of *Mycobacterium tuberculosis* in cheese.]—*Milchwissenschaft.* 11. 391–394. 2161

Milk containing live tubercle bacilli was used for the preparation of various types of cheese in order to test the viability of *M. tuberculosis*. In hard cheese of the Emmentaler and

Gruyère type the organism survived from 5–30 days. As such cheese is allowed to ripen for at least four months before consumption there is no danger of infection. In semi-soft cheese virulent tubercle bacilli were demonstrable up to 305 days by g. pig tests. In soft cheese of the Camembert type the organism retained its viability for periods up to 47 days. The hygienic aspect of these findings was discussed.—E. G.

HAYES, W. J., Jr. & GAINES, T. B. (1950.) Control of Norway rats with residual rodenticide warfarin.—*Publ. Hlth Rep., Wash.* 65. 1537–1555. 2162

The results of tests using a stomach tube, simulated field tests, and actual field tests on infested grocers' shops, abattoirs, markets, etc., on the control of albino and wild Norway rats with "warfarin", 3-(α -acetylbenzyl)-4-hydroxycoumarin, are reported. This compound kills effectively only when consumed repeatedly, does not induce bait shyness, and produces an easily recognizable syndrome and typical lesions in over 85% of rats killed by it. All rats tested withstood a single dose of warfarin at the rate of 50 mg. per kg. body-weight, whereas 90% of rats given the compound by stomach tube for five consecutive days were killed by a total dosage of 5 mg. per kg. body-weight. In rat-infested premises the warfarin was effective at a concentration of 0.05 mg. per g. of bait (yellow maize meal). The costs of rat control by this means and the hazards to cats and other domestic animals are discussed.—J. M. JACOBS.

See also absts. 1941 (paratyphoid B epidemic from milk); 1942 (*S. typhi-murium* in duck eggs); 1976 (public health aspect of leptospirosis in man and dog); 2195 (isotopes in public health).

LIVESTOCK HYGIENE

STRYSZAK, A. (1950.) Rola wody w szerzeniu zaraźliwych chorób zwierząt i los zarazków chorobotwórczych w wodach naturalnych. [Bacterial content of water and dissemination of infectious diseases.]—*Med. weteryn.* 6. 408–410. 2163

Fast running streams can transport pathogenic organisms for a considerable distance. The anthrax bacillus can survive for a long time in mud on the river bed contaminating nearby pastures at spring floods. Christianson found bovine type tubercle bacilli in water taken from a small stream as far as 4 km. from the site of contamination by the effluent from an abattoir. Common drinking troughs facilitate the spread of disease especially F. and M. disease and TB. The safest water for drinking is from deep wells. S. believes that in natural waters micro-organisms cannot multiply freely. This is due not to lack

of nourishment but to the phagocytic action of protozoa. In boiled water or water filtered through Chamberland filters pathogenic bacteria can survive much longer than in unboiled water. Purdy and Butterfield have shown that protozoa will not survive in water containing no bacteria and that the number of bacteria remains constant in water from sewers containing no protozoa. Apart from protozoan activity the process of self-purification is aided by temperature of the water, light, sedimentation and bacteriophages.

The action of light penetrates to a depth of 3 m. Sedimentation immobilizes those bacteria which have escaped phagocytosis.

Dispersion hastened by currents, waves and wind also aids purification. The biological process of self-purification in sea water is more or less the same as for inland waters. The

optimum temperature for self-purification appears to be about 20° C. The rate at which self-purification takes place depends on the degree of impurity of the water. There is always a balance between water borne bacteria and protozoa and an increase of soil bacteria always causes an increase in the number of protozoa.

The biological processes causing purification are irregular and unstable depending on the existing individual regional conditions.

—J. R. MITCHELL.

IGNATIEFF, V. [Edited by.] (1949.) **Efficient use of fertilizers.** pp. 182. Washington: F.A.O. Agric. Studies No. 9. **2164**

See also abst. 2175 (spray tunnel for cattle).

REPRODUCTION AND REPRODUCTIVE DISORDERS

NOVAZZI, G. (1949.) Diagnosi precoce di gravidanza nella cavalla col "Lupinus albus L". [Pregnancy diagnosis in mares by the white lupin test.]—*Profilassi*. **22**. 96–100. [English and French summaries. Abst. from summaries.] **2165**

The serum of a clinically healthy pregnant mare has a more pronounced retarding effect on the growth of *Lupinus albus* than the serum of a non-pregnant mare.

The constancy of the phenomenon found in 22 sera out of 25 may render it useful as a pregnancy test in the mare.

BHADURI, J. L. (1950.) **Pregnancy diagnosis tests in farm animals [using the common Indian toad, *Bufo melanostictus* Schneid.].**—*Vet. Rec.* **62**. 618–619. **2166**

The previous good results obtained in the diagnosis of pregnancy in cows [*V.B.* **20**. 247] by the injection of faecal extracts into male toads were confirmed, positive results being obtained as early as 15 and 22 days after service. By a slight modification in the preparation of the extracts the method was found satisfactory in the buffalo but was not yet reliable in the goat.

—A. T. COWIE.

CRUZ, W. O., DA SILVA, E. M. & PIMENTA DE MELLO, R. (1948.) **Attempts to modify the pathological picture produced in dogs by high doses of estradiol benzoate.**—*Rev. Brazil. Biol.* **8**. 231–245. **2167**

Subcutaneous doses of oestradiol benzoate varying from 0.9–22 mg. per kg. body weight, given to 23 healthy adult dogs resulted in a pathological picture similar to thrombocytopenic purpura in man. Symptoms were anaemia and

The nutrient requirements of plants, their supply by animal manures, composts, and town sewage, chemical fertilizers and soil amendments, and the effects of climatic conditions, crop sequences and types of soil occurring in tropical and temperate regions are described. Deficiency or excess of some chemical elements, while without effect on plants, may have harmful effects on animals consuming them. The author describes the application of the sewage from Melbourne on a rotation system to permanent pastures. The health of the cattle grazing on these pastures was excellent; the mortality rate from all causes was low; TB. was practically non-existent, but slight infestation with *Cysticercus bovis* was reported.—J. M. JACOBS.

severe intestinal haemorrhages. P.M., there were punctiform haemorrhagic lesions in the small intestine, particularly in the mucosa of the jejunum. Attempts to influence this pathological picture, by surgical restriction of the circulation in the jejunum, removal of one kidney and provision of a gall bladder fistula had no effect. Resection of the jejunum resulted in the formation of the typical lesions in the ileum, colon and rectum.

Although administration of vitamin K₁ (4-amino-2-methyl-1-naphthol hydrochloride) and vitamin K₃ (2-methyl-3-hydroxy-1, 4-naphthoquinone) shortened the period of latency, P.M. findings were not affected.

The clinical picture in dogs given oestradiol benzoate whilst on normal diet was similar to that in dogs given the drug during periods of fasting. Transfusions of blood and of platelets aggravated the condition.—E. G.

DICZFALUSY, E. & WESTMAN, A. (1950.) **On the effect of α -tocopherol upon progestational proliferation in the rabbit.**—*Acta endocrinol.* **5**. 275–291. [In English. Authors' summary modified.] **2168**

The administration of massive doses of α -tocopherol does not enhance the activity of progesterone, when assayed in immature rabbits according to the method of McPhail. Given orally or parenterally, excessive amounts of α -tocopherol do not induce any progestational changes in the endometrium of oestrone-primed immature rabbits, while in mature ovariectomized, oestradiol benzoate-primed rabbits inconsistent results are obtained. Systematically administered DOCA [desoxycorticosterone acetate] possesses approximately one sixth of the

activity of progesterone. Its luteinizing effect cannot be enhanced by the simultaneous administration of large doses of α -tocopherol. α -tocopherol and α -tocopherol quinone do not simulate the action of progesterone when administered directly into the uterus of mature ovariectomized rabbits. Formaldehyde, cold-stress and the administration of pure adrenocorticotrophic hormone fail to induce endometrial luteinization in tocopherol-treated, immature or ovariectomized mature rabbits.

JAWORSKI, Z. & KOWALEWSKI, K. (1950.) Dosage des 17-cetosteroides neutres dans le liquide amniotique. [Ketosteroids in the amniotic fluid.]—*Acta endocrinol.* 5. 157-164. [English summary copied verbatim.] 2169

The amount of 17-ketosteroids [17KS] was determined in the amniotic fluid of 12 male and 12 female fetuses. In the case of male fetuses the average content of 17-KS was 2.28 mg./litre, ranging from 1.50 to 3.12 mg./l., and in the case of female fetuses the corresponding figures were 0.62, 0 and 0.94 mg./l., respectively. The concentration of 17-KS in amniotic fluid is apparently dependent on the sex of the fetus (17-KS being eliminated with fetal urine), and the volume of the fluid. The values obtained seemed to be independent of the body weight of the fetus, and of the presence of meconium or blood in the amniotic fluid. It must be assumed that the high concentration in the case of male fetuses reflects a high 17-KS production by the fetal testes.

SCHÄPER, W. (1948.) Entstehung und Bekämpfung des Ferkelsterbens im Lichte der Erb- und Konstitutionsforschung. [Hereditary and constitutional diseases of piglets.]—*Tierärztl. Umsch.* 3. 177-180. 2170

While attention must be given to hygienic, dietetic and environmental factors, the diseased conditions of piglets have predominantly a hereditary and constitutional basis, and the problem must be dealt with by such measures as a change of boar, the slaughter of boars and sows which do not produce healthy viable litters, and the retention for breeding of those female piglets which remain healthy among diseased litter mates. A search should be made among pigs for those genetic factors involved in the production of disease that could be detected by simple diagnostic procedures.—E. COTCHIN.

PEARCE, L. (1950.) Hereditary osteopetrosis of the rabbit. IV. Pathologic observations; general features.—*J. exp. Med.* 92. 601-624. [Author's conclusions copied verbatim.] 2171

The results of postmortem examination of cases of hereditary osteopetrosis of the rabbit together with histologic observations on organs and tissues other than the skeleton have been described.

The principal findings were, first, those associated with the characteristic progressive anemia of the disease, such as extramedullary foci of hemopoietic tissue, lymphoid hyperplasia, and the occurrence of hemosiderin in the liver, spleen, and lymph nodes.

There was a widespread tissue distribution of intense phosphatase staining and of fine calcium deposition as would be expected in the circumstances of the profound skeletal abnormality. In advanced cases with established growth retardation, malnutrition, and deterioration, the tissues generally showed a decreased glycogen content.

The large amount of parathyroid tissue found in both early and late cases suggested a state of hyperparathyroidism. Low serum calcium, high serum phosphorus and phosphatase levels, and a predominately osteoblastic reaction were suggestive of hypoparathyroidism. The possibility that an involvement of the parathyroid glands was a basic or primary condition of the disease is discussed.

Evidence of a disturbance of other endocrine glands was shown by the predominately acidophilic staining reaction of the colloid of the thyroid, an enlargement of the adrenals in which both cortex and medulla participated, and the tendency toward a basophilia of the anterior lobe of the pituitary.

It was pointed out that before an explanation of the part played by the parathyroid glands in this disease could be made, other data, including particularly embryological studies, must be available. Similarly, an interpretation of other endocrine gland changes must await additional information.

GOODWIN, K., HUTT, F. B. & COLE, R. K. (1950.) A sex-linked lethal gene in the fowl.—*Science.* 112. 460-461. 2172

The sex-linked recessive lethal gene recorded (for which the symbol *xl* is suggested), was found, and its mode of inheritance was demonstrated by mating experiments in White Leghorns. The mode of action of the gene has not yet been determined. It exerted its lethal action during the growing period, and was observed to affect females as young as 23 days and as old as 123 days of age. The symptoms in affected females were hyperacute, death or recovery occurring after a few hours of illness. The first attack was not always fatal, and as many as three attacks

might be survived before the final fatal attack occurred; 2 of 64 affected females made an apparently complete recovery after one and two attacks respectively, and lived to reproduce. Sick birds were invariably discovered in the morning, attacks occurring during or just following a 10–14-hour period of darkness and quiet. In affected chicks there was extreme listlessness; they rested quietly on the sternum with the tip of the beak touching the floor; later, they might pass into a complete coma; occasionally dyspnoea and/or tetanic spasms occurred. P.M. findings were negative.—E. COTCHIN.

HANCOCK, J. (1950.) *Studies in monozygotic cattle twins. II. Recognition of monozygotic twins.*—*N. Z. J. Sci. Tech.* 31. 1–41. [Author's summary copied verbatim.] 2173

The usefulness of various criteria in the recognition of monozygotic cattle twins is discussed. While adopting the "similarity" method of diagnosis, the problem is approached from a new angle in that when a set of twins is examined, points of difference and not points of similarities are looked for. Correct diagnosis depends mainly on the elimination of dizygotic

twins. Insofar as similarities are noted, only those concordant characters which have been shown to be of low frequency in the general population are considered. Frequency tables of various whorls and mouth pigmentation patterns in Jersey and Jersey-cross calves are presented. Simple rules for diagnosis are advanced. Evidence is presented of the accuracy of the diagnosis made in new-born calves, based on subsequent development when similarities and differences are more fully expressed. Attention is drawn throughout the paper to the extent and manner in which monozygotic twins may differ.

HAMMOND, J., Jr. (1951.) *Control by light of reproduction in ferrets and mink.* [Correspondence.]—*Nature, Lond.* 167. 150–151. 2174

A preliminary report. Increased duration of exposure to light in winter accelerated oestrus, but the action of darkness was also an important factor. Some mink on periods of seven hours' light and five hours' darkness had no oestrus. Mink put on short days in summer came into oestrus, started to moult, and came into winter coat.—M. B. COOPER.

See also absts. 1995 (experimental congenital toxoplasmosis in mice); 2048 (antigenic relationship of some mammalian spermatozoa); 2116 (response to drugs of human cervix and corpus uteri in pregnancy); 2128 (sex glands and pentobarbital detoxication); 2135 (serum gonadotrophin); 2138 (barren mares); 2140 (haematological studies in pregnant bitches); 2150 (human cervical secretions in pregnancy and menstruation); 2220 (book, sheep genetics).

ZOOTEC HNY

WORSLEY, R. R. LE G. (1950.) *A spray tunnel for cattle.*—*E. Afr. agric. J.* 15. 192–195. 2175

The disadvantage of spraying cattle as compared with dipping is the longer time involved. In the experimental spray tunnel at Kabete, constructed to eliminate this disadvantage, a single row of nozzles below the animals, and two rows of nozzles obliquely above them are used, the nozzles being adapted watering-can roses with 17 holes of approx. 0.1 in. Cattle can be wetted in 20 sec. Ears may be dressed mechanically or by hand. Two concrete tanks of 400 gal. capacity contain the dip which is in continuous circulation. A footbath is provided at the entrance to the tunnel. A detailed description with dimensions is given.

—GEORGE M. URQUHART.

POLYAKOV, A. A. & VRANCHAN, Z. E. (1949.) [Factory disinfection of goat hair.]—*Veterinariya, Moscow*. 26. No. 4. pp. 35–36. 2176

Tests were made on the disinfection of goat hair infected with anthrax. By subjecting bales of goat hair to an autoclave temperature of 111° C. for 90 min., the organisms were killed. It is recommended that bales put in the autoclave should not weigh more than 30 kg. and that not

more than 50 kg. of hair should occupy 1 cu. m. of chamber space; the bales to be loosely packed and spaced on racks. Although the strength of the hair is reduced by 20%, it can be brought up to standard again by mixing it 1 : 3 with hair not submitted to this heat treatment. [Method of testing heated or unheated hair for anthrax infection not stated.]—F. A. A.

VINTER, F. J. [Compiled by.] (1950.) *Kind killing.* pp. 12. London: The Universities Federation for Animal Welfare. 3d. 2177

This leaflet is intended to help those who may have to kill animals when there are no experts available. The instructions, which are given in simple and straightforward manner, relate to dogs, cats, g. pigs, rats, mice, fish, lobsters, crabs, tortoises, slugs, snails, reptiles, poultry and other birds, in that order. In the case of dogs and cats the methods include nembutal, shooting, chloroform, coal gas and emergency stunning.—ALASTAIR N. WORDEN.

PEREIRA, G. & SERRA, J. A. (1950.) *Inheritance of dominant pigmentation in fine wool Portuguese sheep.*—*Junta Nac. prod. Pec. Lisboa.* Publ. Série A. pp. 22. [In English. Abst. from authors' summary.] 2178

The existence of a dominant type of pigmentation in Portuguese fine wool sheep has been demonstrated. The breed, named Pialdo, has a fleece colour from medium to very dark brown (Nos. 20–31 of Serra's scale). It seems probable that this type of pigmentation will be relatively frequent in the fine wool sheep of the Alentejo and other South Provinces. An Asiatic and Piebald origin being very improbable, the only reasonable hypothesis for the origin of this type of pigmentation is an autochthonous one.

Back cross results point to the probability of this type of pigmentation being due to more than one factor, possibly two. An hypothesis as to the origin of these factors as dominance modifiers of a basic, originally recessive, type of pigmentation is presented. The relations of the dominant pigmentation type to the recessive one and to the factors for white marks are discussed. The crosses are being continued.

RAKO, A. (1950.) Beitrag zur Kenntnis der Leistungseigenschaften der Kreuzungspro-

dukte zwischen einheimischen Ziegen und Saanenziegen. [Productivity of crosses between indigenous Yugoslav and Saanen goats.] —*Schweiz. Arch. Tierheilk.* 92. 305–320. [English, French and Italian summaries. Abst. from English summary.] 2179

Swiss goats, e.g. Saanen, Toggenburg, fawn coloured Alpine breeds, and white German goats were used in cross breeding tests with the native Yugoslav goats, the Saanen breed being mainly used. The productivity of the hybrids was good considering the poor quality of the forage available. The average length of the lactation period was 257 days, the average milk yield being 508 kg. The weight of single kids was about 3.5 kg., that of twins 3 kg. and that of triplets 2 kg. The first oestrus occurred at about 5–6 months of age, but most of the does were bred at 8–9 months. The average gestation period was 150 days. The sex ratio of the new-born was 54.25% males, 44.83% females and the rest intersexes. Of the births 40.75% were single, 50% were twins and 8.26% triplets; quadruplets occurred in less than 1% of cases.

TECHNIQUE AND APPARATUS

HECKLY, R. J. (1950.) The preservation of stock cultures of *Mycobacterium tuberculosis* by freezing.—*Amer. Rev. Tuberc.* 62. 99–100. 2180

Three strains of *M. tuberculosis* were successfully freeze-dried, at -34°C ., using a solid glycerinated egg-yolk medium and washing off with sterile 5% bovine serum albumin (0.5 ml. per lyophilization tube).—MALCOLM WOODBINE.

STIRLING, A. C., STEVENS, M. K. & LAWLEY, D. N. (1950.) Colony counts on strips of agar in tubes.—*J. gen. Microbiol.* 4. 339–344. [Authors' summary copied verbatim.] 2181

For viable counting, 0.1. ml. volumes of bacterial suspension were incorporated in 1.5–2 ml. nutrient agar, which after mixing was allowed to solidify in an almost horizontal test-tube so as to produce a 3–4 in. agar strip. After incubation in the vertical position, the counts of the strips gave estimates of a bacterial population which did not differ significantly from that obtained from plates inoculated with 1 ml. quantities.

KRUSE, E. (1949.) The rapid abnormality indicator for milk.—*Nord. Vet.-Med.* 1. 465–476. [In Danish; title and summary in English.] 2182

K. described controlled laboratory and field tests of an apparatus for measuring the electrical conductivity of milk and for the diagnosis of

mastitis. The apparatus is described in detail and illustrated by a photograph.

Results obtained were compared with the catalase test, pH determination, chloride determination and plate and tube cultures. K. found the apparatus accurate and easy to use and considers that it will provide a welcome substitute in laboratories for the lengthy chloride determination test.—F. E. W.

SIMMONDS, W. L. (1951.) An in vitro method for the evaluation of water soluble fungicides against *Trichophyton*.—*Z. Hyg. InfektKr.* 132. 34–41. [In English. Author's summary copied verbatim.] 2183

A method for evaluating fungicidal activity of water soluble chemicals against a single test organism, *Trichophyton mentagrophytes* is proposed. This method shows a relatively narrow range of activity, sharp end points, is consistent and reproducible and reduces the chemical agent being tested far beyond that amount which might result in fungistatic activity.

STEWART, F. S. & MCKEEVER, J. D. (1950.) The anti-globulin technique applied to the detection of non-agglutinating antibody against *Salmonella typhi* O in human sera.—*J. Hyg., Camb.* 48. 357–360. [Authors' summary copied verbatim.] 2184

A technique for carrying out the anti-globulin test with *Salm. typhi* O suspension is

described; this technique has been used to examine a number of human sera. The degree of amplification of agglutinin titre and the final titres obtained were appreciably greater in the sera of individuals with a history of *Salm. typhi* infection, some of whom were carriers, than in the sera of normal individuals.

MATTHAEI, E. (1950.) **Simplified fluorescence microscopy of tubercle bacilli.**—*J. gen. Microbiol.* 4. 393–398. [Author's summary copied verbatim.] 2185

The fluorescence of tubercle bacilli stained with auramine and rhodamine does not require ultra-violet light. It can be caused by blue light up to 496 mμ. A copper sulphate ammonia liquid filter, suitably diluted, will transmit this wave-band. A gelatin screen filter, absorbing all light below 510 mμ. is used in the eyepiece. Normal, high intensity projection filament lamps, combined with lamp condensers of large aperture, provide suitable light sources. The numerical aperture of the microscope condenser must be fully used by immersion in glycerol. The fluorescence is very bright with the usual biological, and certain binocular, microscopes. The simplicity of the equipment enables fluorescence microscopy of tubercle bacilli to be used at low cost in any laboratory.

BAYLIS, J. R. (1950.) **Use of electron microscope in water treatment control.**—*J. Amer. Wat. Wks. Ass.* 42. 66–74. [Abst. in *Bull. Hyg., Lond.* 25. 720. (1950), slightly modified. Signed: E. WINDLE TAYLOR.] 2186

A description is given of the apparatus, illustrated with electron micrographs.

In bacteriological work an attempt has been made to determine whether it is possible to identify coliform organisms in water in a shorter time than by the usual bacteriological cultural methods. The samples of water are inoculated into lactose broth in accordance with the usual procedure and the bacteria developing are examined on the viewing screen of the electron microscope. The bacteria are compared with micrographs of known coliform organisms and, if identified as such, the specimen is recorded as positive. A total of 2,000 positive presumptive tubes of water have been examined from various sources and correct identification was obtained by the microscope in 91.9 per cent. of the total. Not much time is gained, however, when incubation of at least ten to 12 hours is required and this is followed by the two to three hours needed to prepare a specimen for the microscope and to photograph it.

The microscope has also been used to study algae. It cannot be used for plankton counting,

but its value lies in studying their structure, for example, the "zipper-like" binding near the middle of the *Fragilaria* cell which holds the cells together, and the symmetrical and open, lace-like structure of *Rhizosolenia*. It is not of much use, however, in studying organisms whose shape is changed considerably on drying.

MANHOFF, L. J., Jr. & JOHNSON, M. W. (1950.) **A simple micromanipulator.**—*Science.* 112. 76–77. 2187

The body tube of a microscope is unscrewed from its mount and replaced by a cylindrical block of wood to the top of which a rectangular block of wood is fastened. A detachable type of mechanical stage is then mounted on this platform. The micro-needle is secured to the mechanical stage, when it can be moved in three planes: the two planes of the stage and the third provided by the carriage of the microscope, which has both coarse and fine adjustments.

—L. M. MARKSON.

ROMANES, G. J. (1950.) **The staining of nerve fibres in paraffin sections with silver.**—*J. Anat.* 84. 104–115. 2188

R. discussed and examined in detail the various factors involved. Bodian's technique being dependent on the potency of the particular batch of protargol (a combination of silver with partially hydrolyzed egg albumen)—a variable and therefore unreliable reagent—R. recommended silver chloride as the impregnating salt and detailed his method. If completely black nerve fibres are desired, fine copper wire is added to the impregnating solution the preliminary pH of which must be raised to obtain adequate staining.—L. M. MARKSON.

STÖCKLI, A. (1950.) **Liquorgewinnung und Bestimmung der normalen Liquorwerte beim Rind.** [Collection and examination of the cerebrospinal fluid in cattle.]—*Schweiz. Arch. Tierheilk.* 92. 228–250. [English, French, German and Italian summaries.] 2189

S. explored the various sites for collection of cerebrospinal fluid on 220 cattle with a view to suggesting the most convenient site for use by the practitioner.

His conclusion is that lumbo-sacral is more practical than occipital puncture. Full operative procedures are described and comparisons drawn between the chemical and physical contents of normal [cf. FRAUCHIGER and HOFMANN. *V.B.* 10. 713] and pathological cerebrospinal fluid.

—C. W. OTTAWAY.

GARNER, R. J. (1950.) **Aspiration biopsy of the liver in cattle.** *Vet. Rec.* 62. 729–730. 2190

A cannula, 4 cm.×3 mm., fitted with a trocar was used, together with a syringe to provide suction. The site of puncture is the last intercostal space on the right side. Using a technique that is described, G. obtained liver tissue in 90% of the attempts made.—ROY MACK.

GRUNSELL, C. S. (1951.) Marrow biopsy in sheep. I. Normal.—*Brit. vet. J.* 107. 16–23. [Author's summary copied *verbatim*.] 2191

A method of marrow biopsy by sternal puncture is described for sheep. The preparation and staining of marrow spreads is detailed. Myelograms constructed from differential cell counts on marrow spreads from 10 Cheviot ewes are given.

VERSCHURE, J. C. M. (1950.) The mechanism of the Gros titration and formolgel reaction.—*Acta med. scand.* 139. 51–54. [In English, author's summary copied *verbatim*.] 2192

The formol gel reaction depends upon the absolute gamma-globulin concentration. A positive reaction is obtained if the level of the gamma-globulin is over 2.6 gram %. This reaction therefore might be regarded as a simple means of assessing the gamma-globulin content of the serum. The Gros titration depends upon the ratio: albumin/gamma-globulin.

SHARABRIN, I. G. (1947.) [Apparatus for measuring blood pressure.]—*Veterinariya, Moscow*. 24. No. 7. pp. 27–30. 2193

See also absts. 1916 (Ascoli test in anthrax); 1927 (differentiation of live and dead tubercle bacilli by staining); 1936 (electron and light microscopy of bacterial nuclei); 1937 (fixation of electron microscopic specimens); 1945 (ring test); 1981 (gram stain and cell-wall staining); 1986 (serum-formalin reaction in sleeping sickness); 2033 (serum neutralization test for Newcastle disease virus); 2148 (rapid measurement of tissue pressure); 2150 (rheology of human cervical secretions); 2160 (compact outfit for *Salmonella* diagnosis in meat); 2165–2166 (pregnancy diagnosis); 2175 (spray tunnel for cattle).

MISCELLANEOUS

GUEST, G. H. (1950.) Isotopes—A new public health problem.—*Canad. J. publ. Hlth.* 41. 498–502. [Author's summary copied *verbatim*.] 2195

An attempt has been made in this paper to indicate that the use of isotopes in research, medicine and industry may result in a number of public health problems. The [Canadian] Department of National Health and Welfare has recently established a Health Radiation Unit in its Industrial Health Division to assist in dealing with health problems involved in the use of hazardous radiations produced by radio active materials or X-ray machines. It is likely that as these problems become more numerous, other health radiation units will be set up by provincial health departments. Public health officers should become aware of any health radiation problems

S. briefly described two instruments, a phlebosphymotonometer and a sphymotonomograph. The first is a combined instrument for measuring both the venous and the arterial blood pressures. It is claimed that fine variations of systole and diastole and of dicrotism and pulse are measured by using an oscillating method of recording.

It is stated that the sphymotonomograph records simultaneously the arterial pressure and the pulse. [There are illustrations of these instruments, but they are so badly reproduced that little detail is shown.]—F. A. A.

SOEHRING, K. & BECHER, F. (1949.) Ueber die Messung analgetischer Wirkungen im Tierversuch. [Measurement of analgesia in animals.]—*Arch. int. Pharmacodyn.* 79. 45–69. 2194

Methods for experimental evaluation of analgesic substances are described in detail. Using dogs, silver electrodes were fixed into a canine tooth and electric stimuli of varying frequency were applied both with and without local anaesthesia. In man the effect of analgesic substances was tested by projecting the heat of a 1,000 watt lamp with the aid of a lens on to the blackened forehead of a volunteer. The amount of heat sufficient to cause pain was measured with a radiation pyrometer and expressed in calories per sec. per sq. cm. before and after local anaesthesia. This method, slightly modified, was also carried out in dogs.—E. G.

in their communities and, if they are unable to cope with them, assistance should be secured from a health radiation unit.

SKINNER, H. L., CONN, J. K. & OESTERLE, J. F. (1951.) Experimental study on the use of homonymous transplants of esophagus in dogs.—*Publ. Hlth Rep., Wash.* 66. 29–37. 2196

The authors report rather limited success with the operation due to the usual contraction and stenosis of the lumen. They believe that a successful graft might be made if patency is maintained until the scarring process ceases. It was found that esophageal tissue will remain viable when refrigerated for a period as long as 14 days in a mixture of 90% balanced salt solution, 10% serum, streptomycin, and penicillin.—H. L. GILMAN.

REPORTS

CANADA. (1950.) **Report of the Veterinary Director General for the year ended March 31, 1950.** [CHILDS, T.] pp. 57. Ottawa: Edmond Cloutier, Printer to the King's Most Excellent Majesty. 2197

SWINE FEVER and RABIES have not appeared in Canada since 1946 and, although RABIES occurred in the North West Territories during 1947 it was eradicated by means of an extensive programme of vaccination. NEWCASTLE DISEASE in poultry has occurred sporadically but was successfully dealt with; however, it is feared that this disease will reappear from time to time because it is so prevalent in countries with which Canada has intimate trade relations. F. & M. DISEASE is still unknown, but stringent measures to prevent its entry are enforced.

An ambitious programme of eradication of TUBERCULOSIS IN CATTLE, in which all reactors to the tuberculin test are slaughtered, is giving encouraging results. A country-wide programme of calfhood vaccination against *Brucella abortus* INFECTION is to be launched shortly.

—G. B. S. HEATH.

ST. KITTS-NEVIS. (1948.) **Annual Report of the Veterinary Department for 1948.** [VAUGHAN, A. W.] pp. 6. [Mimeographed.] 2198

A serious outbreak of ANTHRAX occurred in Nevis during the year; one human being and 60 animals died of the disease. One case of ANTHRAX occurred in St. Kitts, the first recorded in 24 years. Control was by vaccination of 3,868 animals and the application of the usual sanitary measures. There were no reactors to tuberculin tests.

LEPTOSPIRAL JAUNDICE was observed among dogs during the year. "There are enormous numbers of uncontrolled dogs."

There was an outbreak of CANINE DISTEMPER for the first time for several years. Control was by the use of distemper serum and also vaccine.

FOWL POX and FOWL PARALYSIS outbreaks occurred, but losses were not severe.

ENZOOTIC COLIC in equine animals occurred only in 7 cases as compared with 14 in 1947 and 37 in 1946. STRONGYLE INFESTATION is considered to be an important contributory factor. Routine dosing with phenothiazine is practised. STEPHANURUS (*S. dentatus*) INFECTION of the kidneys in pigs is very common, the worms being observed in the perirenal fat and pelvis of the kidneys and also in other abdominal organs. PARASITIC INFESTATIONS are common in all animals. Drug treatment is encouraged but lack

of adequate feeding is the main contributory cause of losses.

An artificial insemination scheme was started in November with the Government half-Holstein herd at Bayfords. Semen is collected in Jamaica from the Government pure-bred Holstein bull. Semen samples are found to be viable for five days with refrigeration.

The Colonial Development and Welfare Scheme approved by the Secretary of State in 1944 for capital and recurrent costs for five years of a Veterinary Service for St. Kitts-Nevis, of which a part of the recurrent cost (£3,700) was met from local funds, terminated at the end of 1948.—J. A. GRIFFITHS.

UGANDA PROTECTORATE. (1950.) **Annual Report of the Veterinary Department for the year ended 31st December, 1948.** [CRONLY, H.] pp. 30. Entebbe: Govt. Printer. Shs. 1/50. 2199

BOVINE CONTAGIOUS PLEURO-PNEUMONIA was confined to Karamoja District. It is suggested that the high mortality ordinarily attributed to EAST COAST FEVER is in part due to malnutrition. Experimental work on the use of dips and sprays proceeds in the hope that a satisfactory basis for control may be established. TRYPA NOSOMIASIS constitutes a major problem, but dimidium bromide has helped considerably in its control. Experimental work on the curative and prophylactic value of antrycide was carried out. RINDERPEST was widespread and proved difficult to control owing to a breakdown in the immunity of cattle treated with Kenya attenuated goat virus.

The sale of livestock is controlled in many areas and markets have been established, regular cattle sales being held under Veterinary supervision. During the war some districts were depleted of stock to a dangerous extent. Native Administration Authorities have introduced regulations to redress this tendency. In the intensively farmed areas propaganda has resulted in the production of high quality hides and skins.

Selected pilot areas have been developed in various districts as a means of stimulating interest in better husbandry. Provision of more permanent water has opened up areas of grazing not hitherto utilized in the dry season. Overgrazed land in some areas is controlled by the local Native Councils. Work at the Entebbe Livestock Experimental Station continued, particularly with regard to the selection and culling of stock, establishment of sound systems of record-

ing production, development of the lay-out of the farm and the organization of field trials. Research work proceeded on avianized rinderpest virus, the use of "antrycide" under laboratory and field conditions and on tick control by means of benzene hexachloride and D.D.T.

—S. BRIAN KENDALL.

EAST AFRICA. (1948.) Annual Report of the East African Veterinary Research Organisation, 1948. [WHITE, E. G.] pp. 12. [fcp.] [Mimeo-graphed.] 2200

The East African Veterinary Research Organization was established under the East African High Commission on the 1st Jan. 1948. This report is presented by the first Director of the organization. During 1948 staff was recruited from existing personnel of the Central Veterinary Institute, by transfer of certain staff from the Kenya Veterinary Department and by the recruitment of new staff. The organization has two main functions: the preparation and issue of vaccines and sera for use in East Africa (formerly under the control of the Kenya Veterinary Department) and research into animal health, animal disease and animal industry. During the year most of the work was concerned directly or indirectly with vaccines. Actual research covered investigations into the various types of RINDERPEST virus, the use of antrycide for TRYPANOSOMIASIS and the investigation of benzene hexachloride dips. A mobile laboratory was purchased and equipped for the investigation of TB. in cattle in Tanganyika. With regard to the large-scale preparation of vaccines it appeared that the number of technical and professional staff available, laboratory accommodation and equipment and the general organization at Kabete fell short of the requirements. By the end of 1948, however, additional staff had been engaged, new equipment acquired and a special production block had been built, so that the facilities for vaccine production had been improved. Marked difficulties were encountered particularly with Kabete attenuated goat virus which proved difficult to passage in goats while from the field it was reported that the virus failed to give protection against natural RINDERPEST. Steps were accordingly taken to start a new strain of virus at Kabete. Meanwhile virus from Nigeria and from Cairo (originally from the same strain as that at Kabete) was used for vaccine production.—S. BRIAN KENDALL.

SIERRA LEONE. (1949.) Annual Report of the Veterinary Department for the year 1948. pp. 11. Freetown: Govt. Printer, Sierra Leone. London: Crown Agents for the Colonies. [8vo.] 2201

A Joint Veterinary Service for Gambia and Sierra Leone was financed by the Colonial Development and Welfare Act, for the investigation and control of diseases of domestic livestock and the development of livestock industries as an integral part of the life of the indigenous farmers.

Disease investigation took priority and the part of the scheme intended for the improvement and development of livestock and livestock industries was taken over by the Department of Agriculture with a new Livestock Research Station which is controlled jointly by the Directors of Agriculture and Veterinary Services. Difficulties in recruiting European staff have greatly retarded progress in the early years but much has nevertheless been achieved.

No major outbreak of livestock disease occurred during 1948. 18,020 cattle were vaccinated against BOVINE CONTAGIOUS PLEURO-PNEUMONIA; there were some severe reactions but no deaths. Vaccine was prepared at the Gambian Station of the Joint Services and was transported by air. Sporadic cases of ANTHRAX occurred. There were two outbreaks of AVIAN SPIROCHAETOSIS. Novarsenobil was used with success.

A herd of Ndama cattle kept in a non-cattle area, after thriving for a number of years began to lose condition and were found to have a *T. congolense* infection. Treatment with antimosan failed.

For the second time an outbreak of CONTAGIOUS VAGINITIS occurred at the Livestock Development Station at Musaia and most of the cows were infected. The disease was easily controlled, but is thought to be a cause of some of the breeding difficulties.

One skin disease in pigs in which there is abscess formation and another in cattle caused by a fungus were reported.

In a census of livestock 58,173 cattle; 8,655 sheep and 16,752 goats were enumerated.

—J. A. GRIFFITHS.

U.S.A. (1949.) Sixty-first Annual Report of the College of Agriculture at Cornell University and of the Cornell University Agricultural Experiment Station, 1948. pp. 192. Items of veterinary interest pp. 100-109, 157-166. 2202

A study was carried out on the technique of artificial insemination in farm animals especially in regard to the preservation of stored semen. It was found that there is no significant difference between the rates of dilution for bovine semen from 1 part of semen to 100, 150, 200, 300 or 400 parts of yolk-citrate sulphanilamide diluent. The osmotic pressure of fresh semen from normal

bulls was found to approach that of cattle blood, but when semen was stored either inside or outside the male reproductive tract, there was an increase in its osmotic pressure.

Experiments were carried out on the cobalt requirements of livestock, the physiology of fats and related constituents in lactating animals, the effect of vitamin supplements upon mortality rate and growth of unweaned lambs, etc.

The genetic resistance to poultry diseases was studied. The eleventh selected generations in the two lines of White Leghorns, bred for resistance to the AVIAN LEUCOSIS COMPLEX and in the one line bred for susceptibility completed the 42-500-day test period in the early autumn of 1947. The mortality from NEOPLASMS for the 11th generations was 4.4 and 5.5% in the two resistant lines and 39.1% for the susceptible line. There was no significant change in the mortality from TUMOURS other than those of the AVIAN LEUCOSIS COMPLEX.—D. S. RABAGLIATI.

U.S.A. (1949.) Los Angeles County Livestock Department, California. Twenty-fifth Annual Report, fiscal year ending June 30th, 1949. [HURT, L. M.] pp. 124. Los Angeles, Calif.: County Livestock Dept. [Mimeographed.] 2203

To prevent highly infectious diseases from spreading from their points of origin, an infected farm is completely fenced with high woven wire and the fence is patrolled by armed guards.

Strain 19 vaccine is being extensively used to control BRUCELLOSIS.

ANTHRAX, BLACKLEG, BOTULISM, CALF PNEUMONIA, NECROBACILLOSIS, MASTITIS, and EQUINE ENCEPHALOMYELITIS all cause much trouble to stockmen.

ANAPLASMOSIS has occurred on premises where there are no ticks, and it has now been established that the disease may be transmitted mechanically, e.g. by repeated use of the same hypodermic needle.

RABIES is still present in the county, but GLANDERS, and SHEEP SCAB have been eradicated.

A "PARATHYROID INFECTION" has caused serious mortality among calves, and an outbreak of HAEMATURIA IN CALVES was successfully treated with penicillin, although the cause was never discovered.—G. B. S. HEATH.

U.S.A. (1949.) Massachusetts. Annual Report for the Fiscal Year ending June 30, 1949, Massachusetts Agricultural Experiment Station. *Bull. Mass. agric. Exp. Sta.* No. 453. pp. 86. [Items of veterinary interest pp. 78-80.] 2204

The incidence of MASTITIS caused by *Streptococcus agalactiae* is rapidly declining.

PULLORUM DISEASE, INFECTIOUS BRONCHITIS, and NEWCASTLE DISEASE were studied.

—G. B. S. HEATH.

KALIKIN, B. (1950.) [Annual report of the Serbian Veterinary Bacteriological Institute, Belgrade, for the year 1949.]—*Vet. Glasnik*. 4. No. 1 pp. 39-45. 2205

Over 180,000 specimens were examined by the institute during 1949 of which over 170,000 were negative. Summarized, the positive results were ANTHRAX 123, RABIES 73, SWINE FEVER 470, GLANDERS 79, DOUBINE 52, INFECTIOUS ABORTION 682, BLACKLEG 4, SWINE ERYSIPELAS 4, FOWL PLAGUE and NEWCASTLE DISEASE 77, PULLORUM DISEASE 61, FOWL CHOLERA 168, BLACKHEAD 4. Numerous other infectious and parasitic diseases were the subject of bacteriological, serological and parasitological investigations.—E. G.

BOOK REVIEWS

FAIRBROTHER, R. W. [M.D., D.Sc. (Man.), F.R.C.P. (Lond.) Director of the Department of Clinical Pathology, Manchester Royal Infirmary.] (1949.) *A text-book of bacteriology*. pp. viii+484. London: William Heinemann Medical Books Ltd. 6th Edit. 20s. 2206

This concise presentation of the principles of general bacteriology, of the physiology, serology and systematic classification of bacteria, both saprophytic and pathogenic to mammals, and of their application in the control of diseases of man and animals, has recommended itself for the past decade to students of medicine and veterinary science. Throughout the first and

subsequent editions, the author has maintained his avowed intention of laying principal emphasis on the prophylaxis, diagnosis and specific therapy of bacterial diseases and of omitting tedious details of laboratory technique, unnecessary for other than laboratory workers. Moreover, the explanatory figures, tables and plates have been limited in number to simple illustrations of basic methods, classifications and statistics. A notable feature of this nevertheless essentially scientific textbook is that the subjects of infection, immunity and serology with all their relative definitions have been expounded in a refreshingly lucid manner. The short chapter on "Bacteriology and Medicine" con-

stitutes an invaluable précis of the application of various bacteriological methods to the practice of medicine.

This sixth edition has been brought up to date by the inclusion of the progress made in recent years in the fields of chemotherapy with antibiotics, ultrafiltration and the virus diseases, systematic bacteriology, blood grouping, rickettsial infections and the bacteriology of milk, water and shellfish.—R. O. MUIR.

BURROWS, W. [Ph.D. Professor of Bacteriology, Department of Bacteriology and Parasitology, the University of Chicago.] (1949.) **Jordan-Burrows textbook of bacteriology.** pp. xx+981. Philadelphia & London: W. B. Saunders Co. 15th Edit. 45s. 2207

This is one of the most comprehensive of recent treatises on bacteriology in the form of a single volume of reasonable bulk, and can be recommended.

The binding and print are of a high standard and the 264 figures include a number of excellent electron micrographic plates. A valuable feature of the index is the indication, by the use of bold face type, of the subjects that are treated in more detail.

Although the title of the book is "bacteriology", protozoology and helminthology are included. The chapter dealing with laboratory methods details the majority of routine technical procedures according to the standards adopted by the Society of American Bacteriologists and the American Public Health Association.

Emphasis is laid on the importance of genetics, respiration and nutrition as factors in the study of the relationships and development of micro-organisms. Records are given of the recent rapid progress made in these three main fields and of their application in the development of rational chemotherapeutic measures for the control of bacterial infections. The contribution made by electron micrography in the investigation of the morphology of bacteria and the filtrable viruses is well dealt with.

Basic immunological reactions are described and explained in a comprehensible fashion and the functions of antibacterial substances, both chemical and colloidal, are defined in terms of bacterial physiology.

Comprehensive accounts are given of the bacteriology of water, sewage, milk and food-borne infections and the field of comparative bacteriology is kept in view throughout the sections on the systematic study of bacterial, rickettsial and virus infections.—R. O. MUIR.

CLIFTON, C. E. [Ph.D., Prof. of Bacteriology, Stanford University.] (1950.) **Introduction to**

the bacteria. pp. xii+528. New York, Toronto & London: McGraw Hill Book Co. Inc. [1st Edit.] \$5.00. (42s. 6d.) 2208

This book treats bacteriology as a science *sui generis* and is not confined to medical or veterinary bacteriology. The general principles of bacterial behaviour are dealt with rather than detailed descriptions of the different species and genera. The dedication, part of which is "... to those students who develop an interest in the bacteria, as bacteria", indicates the bias of the book.

In addition to the more purely medical aspects of bacteriology there are chapters on the bacteriology of soil, air, water, on industrial bacteriology and on the preservation of food.

The protozoa, fungi and viruses are also dealt with in short chapters.

This is an excellent introduction to the subject.—M. C.

KOEGEL, A. (1950.) **Nutztierparasitologie für Tierärzte, Landwirte und Nutztierhalter. [Protozoology and entomology for veterinarians and owners of livestock.]** pp. vii+339. Stuttgart: Ferdinand Enke. Unbound: DM. 30.—. Bound: DM. 32.70. 2209

This is the first of two volumes and comprises protozoology and entomology. The helminths are to be included in a subsequent volume.

There is a preliminary section on the origin and types of parasitism, influence of the parasitic way of life on the parasite and of the host on the parasite, damage to the host by the parasite, a very brief historical review of parasitology and a note on its economic importance and nomenclature, and the work is then divided into two sections, protozoology and entomology, each of which is subdivided into a general and a systematic part.

Among the flagellates, trypanosomiasis, especially the European form of dourine receives considerable attention, but *Trichomonas foetus* has scant notice, whilst *Histomonas meleagridis* is not mentioned at all. On the other hand, the sporozoa, particularly those of veterinary importance, are adequately presented.

The introduction to the section on entomology includes fairly extensive chapters on deterrents and control measures and technique. The systematic part is brief but comprehensive and includes numerous genera which are of only academic interest to the readers for whom the work was written. But the more important parasites such as ticks and mosquitoes and the diseases which they transmit are given in more detail.

There are a number of good illustrations, but the diagram of a male *Psoroptes ovis* on p. 212 does not show either segmented pedicels or suckers on the ends of the legs, whilst in Fig. 114 the so-called pupa of *Gastrophilus intestinalis* bears more resemblance to a third stage larva of *G. veterinus*.

There are quite a number of spelling mistakes; examples are *Isospora rivoltai* for *I. rivolta* (p. 84) and *Haemophysalis* for *Haemaphysalis* (pp. 95 and 100).—M. L. CLARKE.

ASHTON, W. M. [B.Sc., Ph.D., A.R.I.C., Senior Lecturer in Agricultural Chemistry, University College of Wales, Aberystwyth.] (1950.) *Elements of animal nutrition*. pp. xi+208. London: Charles Griffin & Co. Ltd. 2210.

Twenty years ago the student of animal nutrition had necessarily to obtain his knowledge of the subject from lecture notes, official bulletins and original papers, supplemented with selections from Henry and Morison's *Foods and Feeding*, T. B. Wood's *Animal Nutrition* and a translation of Kellner's *Scientific Feeding of Farm Animals*. Over the intervening period several reasonably priced books on the subject have become available, of varying standards of quality and usefulness, with the result that any new publication tends to be judged comparatively and no longer by the claim of "fulfilling a long-felt want". The objective of the present book is made clear at the outset, that of "giving a concise account of the basic principles underlying the feeding of farm animals", and the work is primarily intended as a textbook for undergraduate students of agricultural chemistry and for those taking NDA and NDD examinations. The notice of the book appearing on the dust-cover states that it is also intended that it may serve as a reference handbook for farmers, stock breeders, veterinary surgeons and others requiring solutions to everyday problems in stock feeding. Some previous knowledge of chemistry is assumed, although it is hoped that students, other than those specializing in chemistry will be able to follow the main themes of the book.

The treatment of the subject matter is orthodox and conventional. The book opens with chapters on fats and oils, carbohydrates, proteins, mineral constituents and vitamins, followed by considerations of the concept and mechanism of digestibility. The principal classes of feeding stuffs are then dealt with, and the author gives expositions of starch equivalents and American and Scandinavian feeding standards, including their uses in practical rationing. These lead on naturally to considerations of feeding of growing

and fattening cattle, dairy cows, sheep, horses, pigs and poultry. There is a bibliography referring the reader to other books and publications on general and selected topics of animal nutrition, and, lastly, the conventional tables of composition, digestibility and nutritive value of individual feeding stuffs are reproduced.

The author has borrowed material very freely, if with due acknowledgements, from other books and official publications. One regrets a further perpetuation of the use of starch equivalents, evaluated with ruminants and strictly applicable to this class of stock only, for horses, pigs and poultry; likewise the statement that Kellner's lower fibre correction factor should be used for chaffed hay and straw (Kellner's original work is quite specific in referring to chaff as the glumes of cereal grains). The veterinary reader will probably disagree that "calcium deficiency . . . produces milk fever in dairy cows", and that nowadays treatment of lactation and grass tetany is accomplished by injections of "calcium and magnesium chlorides . . . or calcium gluconate" (*sic.*). Similar statements of which these are typical occur throughout the text and tend to detract from the value of the book as a whole.

The book should prove useful to those requiring an introduction to the elements of animal nutrition, although it is doubtful whether it is sufficiently practical in outlook to serve as a reference book for those serving in an advisory capacity on nutrition. It is well-written, in an easy style, and clearly presented; moreover, its cost is modest by present-day standards.

—A. EDEN.

CARROL, H. T. (1949.) *Diseases of sheep in Western Australia and South Australia*. pp. xx+444. Perth, W. Aust.: The Author. £3 3s. 2211

According to the preface this book has been written for sheep farmers and students of agricultural high schools and colleges. It contains information on bacterial, metabolic, nutritional and parasitic diseases of sheep. Other sections cover diseases of the urogenital system and foot, and mineral and plant poisoning. There is a chapter on general matters such as first aid, disinfection, carcass disposal, scheduled diseases, administration of medicines, aging etc. Most technical books written for the layman tend to lose accuracy during the process of simplification, and unfortunately this one is no exception. The text contains a large number of good illustrations.—J. D. STEEL.

AGGELER, P. M. [M.D. Assistant Clinical Professor of Medicine.] (1949.) *Hemorrhagic*

disorders. A guide to diagnosis and treatment. LUCIA, S. P. [M.D. Professor of Medicine, University of California Medical School. pp. xi+111. Chicago: The University of Chicago Press. London: Cambridge University Press. 75s. 2212

The statement on the dust-jacket claims that "the principles of visual education" are used in the presentation of this book. The pages are designed like filmstrips so that illustrations and graphs predominate and the text is reduced to summary form and set in large type. Many of the illustrations are effective, though one or two might be thought superfluous; for example, the picture of a woman's nose obscured by a blood-stained handkerchief under the heading "Familial Epistaxis".

Some readers will resent being instructed in this seemingly childish way, but information is easily and quickly assimilated from this book. The graphs are clear and informative, and the text, though necessarily rather dogmatic, is sound and straightforward. The typography is unsatisfactory and the ugly letters are very tiring to the eye. Normal type, however, is resumed for the last twenty-five pages. A useful bibliography is included.

This should prove a valuable book for those who wish to grasp the subject quickly, for though the presentation is simple, the details are there. The price is rather high.—G. FULTON ROBERTS.

GADD, H. W. [Of the Middle Temple and Western Circuit. Barrister-at-Law. Formerly Lecturer on Pharmacy at the University College, Exeter.] (1948.) *Gadd's synopsis of the British pharmacopoeia, 1948, and of the law of poisons and dangerous drugs of Great Britain, Northern Ireland and Eire.* pp. 249. London: Baillière, Tindall & Cox. 15th Edit. 15s. 2213

This vest-pocket-size synopsis, intended for practitioners and students, is a summary of the 1948 British Pharmacopoeia and also of the special laws governing the use of drugs which are especially lethal or which may lead to addiction.

It contains a list of abbreviations, certain definitions, alcoholic tables, a list of elements and atomic weights, thermometric scales, weights and measures, a complete table of all chemicals, drugs and preparations in the Pharmacopoeia and the addenda thereto, poison laws, dangerous drugs acts and regulation of the sale of medicines.

—E. M. J.

ROLFE, H. G. [B.Sc. (Lond.), F.R.I.C. Pharmaceutical Chemist.] [Revised by.] (1950.) *Bennett's materia medica and pharmacy for*

medical students. pp. xxviii+276. London: H. K. Lewis & Co. Ltd. 5th Edit. 16s. 2214

In the fifth edition the subject matter of Bennett's *Materia Medica and Pharmacy* has been completely revised. The classification used is similar to that of earlier editions, but considerable alterations and additions have been made in order to conform with the British Pharmacopoeia of 1948. The method of expressing doses in both the metric and imperial systems has been adopted throughout the book. In the metric system quantities of 0.1 gramme or more are usually stated in terms of a gramme (G.), and smaller quantities in milligrammes (mg.). It is recommended that G. should be used in writing prescriptions to avoid confusion between gramme and grain.—E. M. J.

SIRI, W. E. (1949.) *Isotopic tracers and nuclear radiations with applications to biology and medicine.* pp. xiii+653. New York, Toronto, London: McGraw-Hill Book Co. Inc. 1st Edit. 106s. 6d. 2215

This valuable reference work provides the unfamiliar biologist with a detailed compilation of the scattered literature of the subject. The general treatment does not claim to be exhaustive but covers fairly fully the physical techniques employed in the utilization of isotopes.

Parts 1 and 2 of the book present 23 chapters on "Isotopes and Nuclear Radiations" and "Methods and Instruments". Much of this is properly the province of the physical member of the team, but the presentation is eminently readable and provides an admirable and essential approach for the biologist.

Part 3, covering 140 pages and written by Dr. E. C. Dougherty, deals with the "Biological and Medical Applications of Isotopes", and is designed, not as a comprehensive review, but as a "reference source for biologists who propose to employ isotopes as tools in their work". The seven chapters of this part are arranged as a guide so that the investigator may discover which isotope, if any, is most suitable for a particular problem. The elements are discussed in turn according to their biological significance as constituents of organic and mineral metabolites and as trace elements. A further chapter deals with therapy and diagnosis and includes a number of tables indicating the types of investigation in which particular isotopes were successfully applied or are of potential value. The concluding chapter comprises a comprehensive bibliography of over 2,000 references arranged according to the element employed. With the aid of earlier chapters no difficulty should be experienced in finding those references which

are relevant to a particular problem. References subsequent to the end of 1947 are specifically omitted except in one or two cases, but D. points out that the period from the end of 1947 to the present day is covered by the relevant sections of *Biological Abstracts* and *Nuclear Science Abstracts*.

In short, the biological section of this book is brief but very much to the point in that it fulfils its purpose as an important reference source for an extensive subject.—C. J. BRADISH.

GREEN, H. N. [M.A., M.D., M.Sc. Professor of Pathology, University of Sheffield.] STONER, H. B. [M.D., B.Sc.] (1950.) **Biological actions of the adenine nucleotides.** pp. xvi+221. London: H. K. Lewis & Co. Ltd. 25s. 2216

In 1940, at the suggestion of the M.R.C., a small unit was formed in Sheffield under Professor Green to study traumatic shock, and as a result of previous clinical observations an experimental programme was drawn up and developed, culminating in study of the biological action of the adenine and hypoxanthine nucleotides. Despite the small size of the unit, the attack on the problem of general bodily reactions to injury was made on the broad lines of physiological, pharmacological, and biochemical studies, and the present monograph comprises an account of such studies, together with relevant observations by other research workers. In a foreword, Sir Edward Mellanby heartily commends the book to all interested in experimental medicine, not merely because of the very important new observations arising from the studies, fully reported in the text, but also as an example of a type of experimental method which ought to be more widely practised.

The key to the investigations, which form the subject of the major part of this book, was the discovery of the role of adenosine triphosphate [A.T.P.] in shock-production and that this substance and other related nucleotides were responsible for the shock-inducing action of injected muscle extracts. The development of methods for isolating and purifying these nucleotides from fresh muscle enabled the research team to extend its studies on the mechanism and role that these substances played in shock actions, carried out along physiological, pharmacological and biochemical lines. The present monograph gives a lucid account of these findings, in general and in detail.

After an introductory chapter on the chemistry of the adenine nucleotides, the authors consider the metabolism and general biological actions of A.T.P., the effects of purine derivations on the cardiovascular and respiratory

systems, and the influence of Mg^{++} and Ca^{++} on nucleotide activity. Consideration is given to the effect of pulmonary embolism on the action of nucleotides; miscellaneous and therapeutic agents in A.T.P. shock; and to discussion of the possible role of nucleotides in pathological states. A characteristic and commendable feature of each chapter is the provision of a concise summary underlying the main points of the subject matter.

It would be superfluous to add to Sir Edward Mellanby's high commendation of the value of the work presented and of the way in which the various problems were tackled. Let it suffice to say that the telling in this monograph of the story of the discovery of the importance and role of the nucleotides in shock actions is on as high a plane as that on which the original work was planned and executed.—A. EDEN.

EGGERT, O. K. (1950.) **Physikalische Tiermedizin. [Physiotherapy in veterinary medicine.]** pp. xii+187. Stuttgart: Ferdinand Enke. Unbound: DM. 24. —. Bound: DM. 26. 80. 2217

Therapeutic measures of a physical nature are widely employed in human medicine but are not used to nearly the same extent in veterinary medicine, mainly because it is thought that the apparatus is too cumbersome or expensive except for use at a clinic. Moreover no textbook solely concerned with such treatments has been available to the veterinary practitioner. The author considers that physical therapy should play a much more prominent part in veterinary work than it does at present and points out that there are many simple procedures such as massage and the application of heat and cold which may be of great benefit in selected cases.

In this book the subject is presented systematically. The underlying principles of treatment of diseases by water, heat and cold, cauterization, light rays or radium emanations together with the apparatus required for their application are described and the external and internal conditions which may benefit from their use are discussed in detail. The conditions dealt with range from eczema to diseases of the alimentary and reproductive tracts, most attention being paid to muscles, tendons and joints. Whilst perhaps no very revolutionary methods of treatment are described, nevertheless the book is a useful contribution to veterinary literature as apart from the larger manuals on veterinary surgery. No convenient book dealing with such treatments has hitherto been available.

—J. A. NICHOLSON.

FLYNN, J. E. [Edited by.] (1948.) **Blood clotting and allied problems.** Transactions of the First Conference February 16-17, 1948, New York, N.Y. pp. 179. New York: Josiah Macy, Jr. Foundation. 2218

This publication contains a *verbatim* report of a conference of some twenty-five workers interested in various aspects of blood coagulation and an appendix is included of the techniques employed at various laboratories.

The sections include:—Blood Clotting and Hemostasis: Jaques, L. B.; Fibrinolytic Enzymes: Astrup, T.; Report of the Committee anent Terminology for the Proteolytic Enzymes of Plasma; Initiation and Acceleration Factors in Thrombosis: Brinkhous, K. M.; Some Unsolved Problems in the Chemistry of Blood Clotting: Edsall, J. T.; Protein Equilibrium Reactions in the Blood Clotting Mechanism: Seegers, W. H., & Ware, A. G.; Value of Prothrombin Determinations: Wright, I. S.; Dicoumarol and the Estimation of Prothrombin: Link, K. P.; Two Stage Prothrombin Determination: Seegers, W. H.; Determination of Prothrombin in Plasma and Plasma Fractions: Edsall, J. T.; Prothrombin Determinations: Tocantins, L. M.; Technique of the Quick Prothrombin Time as Performed at the Mayo Clinic: Barker, N. W.; Determination of Prothrombin Time: Jaques, L. B.; The Determination of Prothrombin: Quick, A. J.; Prothrombin Clotting Time Determination: Brambel, C. C.; Method for the Determination of Prothrombin Clotting Time: Overman, R. S.—J. A. J. VENN.

PINCUS, G. & THIMANN, K. V. [Edited by.] (1950.) **The hormones. Physiology, chemistry and applications.** Vol. II. pp. ix+782. New York: Academic Press Inc. \$13.50. 2219

The editors presented contributions by thirteen specialists working on various branches of this vast subject, arranged in ten chapters, as follows:—I. The Physiology of Ovarian Hormones, by Gregory Pincus; II. Physiology of Androgens, by Ralph I. Dorfman; III. Physiology of the Adrenal Cortex, by R. L. Noble; IV. The Chemistry and Physiology of the Thyroid Hormone, by William T. Salter; V. The Control of Thyroid Activity, by William T. Salter; VI. Physiology of the Gonadotrophins, by Herbert M. Evans and Miriam E. Simpson; VII. The Hypophysis and Diabetes Mellitus, by Leslie L. Bennett and Herbert M. Evans; VIII. Hormones of the Posterior Pituitary, by H. Waring and F. W. Landgrebe; IX. Chemical Control of Nervous Activity. A. Acetylcholine, by David Nachmansohn; IX. Chemical Control of

Nervous Activity. B. Adrenaline and Sympathin, by H. Blaschko; IX. Chemical Control of Nervous Activity. C. Neurohormones in Lower Vertebrates, by George Howard Parker; and X. Clinical Endocrinology, by Harry Freeman.

The book is intended for research workers interested in this field; each chapter is preceded by a helpful list of contents with the corresponding page number and followed by a very comprehensive list of references. The various contributions have been so arranged to bring out the general structure of the whole subject in a well-balanced form and there are good author and subject indexes. Readers will be grateful to both authors and editors for the systematic presentation of so much new knowledge in an authoritative and critical way and the book should be of great value to veterinary, medical or biochemistry workers.

In regard to production, the paper, printing and binding are excellent; the high cost, 13.50 dollars, may, however, be an obstacle to purchase.—E. M. J.

SERRA, J. A. (1948.) **Génétique du mouton. Mise au point critique.** [The genetics of the sheep.] pp. 200. Lisboa: Junta Nacional dos Produtos Pecuários, Ministerio da Economia. [In French.] 2220

The Junta Nacional dos Produtos Pecuários, an organization under the Portuguese Ministry of Economy which concerns itself, amongst other things, with wool production and utilization, proposes to issue two series of publications—one dealing with relevant scientific research, and the other with its practical application—and this illustrated monograph is the first in the former series.

Although the genetics of the sheep is still a little-understood subject, for reasons which the author discusses in his introductory chapter, certain information with practical applications is already available. The author's object in preparing this book was to present a critical review of the literature, and at the same time to report the preliminary results of work in progress on the genetics of sheep in French, a language familiar to a wider circle of readers. The subjects dealt with in their theoretical and practical aspects are: Pigmentation of wool, skin and eyes, (the longest section of the book); colour of fat; development of horns; characters of ears and tail; polymastia; morphological types and production of meat; fecundity and fertility; production of milk and of wool; blood groups; length of gestation; resistance to parasitism; adaptation to climate; lethal and sublethal

factors; linkage, chromosomes, and hybridization. In the last chapter, a summary is given of the most important facts, with their most prob-

able interpretation, and symbols are proposed for the various hereditary factors. There are over 200 references in the bibliography.—E. COTCHIN.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

DE BEAUFORT, L. F. (1951.) *Zoogeography of the land and inland waters.* pp. viii+208. London: Sidgwick & Jackson, Ltd. 30s.

BELLER, K. (1949.) *Viren und Miasmen. [Viruses and miasma.]* pp. 80. Stuttgart: Franckh'sche Verlagshandlung.

BRANSTON, B. (1951.) *Breeding for production.* pp. 105. London: Faber & Faber, Ltd. 12s. 6d.

BUSVINE, J. (1951.) *Insects and hygiene. The biology and control of insect pests of medical and domestic importance in Britain.* pp. xiv+482. London: Methuen & Co., Ltd. 30s.

CONN, H. F. (Edited by) (1951.) *Current therapy 1951. Latest approved methods of treatment for the practising physician.* pp. xxxi+699. Philadelphia & London: W. B. Saunders Co. \$10. (50s.)

GALE, E. F. (1951.) *The chemical activities of bacteria.* pp. 213. London: University Tutorial Press, Ltd. 3rd Edit. 9s. 6d.

HAM, T. H. (1950.) *A syllabus of laboratory examinations in clinical diagnosis. Critical evaluation of laboratory procedures in the study of the patient.* pp. xii+496. Cambridge, Mass.: Harvard University Press.

JAULMES, C., JUDE, A. & QUÉRANGAL DES ESSARTS, J. (1951.) *Pratique du laboratoire. Techniques générales—diagnostics biologiques—hématologie—sérologie—parasitologie et entomologie médicales—technique anatomopathologique. [Laboratory technique.]* pp. viii+699. Paris: Masson & Cie. Fr. 2,500 or 3,000.

KOEGEL, A. (1951.) *Zoonosen (Anthropozoonosen). Die für Mensch und Tier gemeinsam wichtigen Krankheiten. [Animal diseases communicable to man.]* pp. 243. Basle: Ernst Reinhardt Verlag AG. Sw. fr. 8.80 or 11.—

MAREK, J. & MÓCSY, J. (1951.) *Lehrbuch der klinischen Diagnostik der inneren Krankheiten der Haustiere. [Textbook of clinical diagnosis of internal diseases of domestic animals.]* pp. xii+630. Jena: Gustav Fischer. 4th revised Edit. DM. 30.—

SUMNER, J. B. & MYRBÄCK, K. (1950.) *The enzymes. Chemistry and mechanism of action.* Vol. 1, Part 1. pp. xvii+724. New York: Academic Press Inc. \$13.50.

SUMNER, J. B. & MYRBÄCK, K. (1951.) *The enzymes. Chemistry and mechanism of action.* Vol. 1, Part 2. pp. x+636. New York: Academic Press Inc. \$12.80.

TOBBACK, L. (1951.) *Les maladies du bétail du Congo belge. [Diseases of domestic animals in the Belgian Congo.]* pp. xi+520. Brussels: Ministère des Colonies, Direction de l'Agriculture et de l'Élevage et de la Colonisation. 2nd Edit.

TURPIN, R. (1951.) *L'hérédité des prédispositions morbides. [Heredity of predisposition to disease.]* pp. 261. Paris: Librairie Gallimard. Fr. 450.

ANON. (1950.) *Cold Spring Harbor Symposia on Quantitative Biology.* Vol. XIV. Amino acids and proteins. pp. xii+217. Cold Spring Harbor, L.I., New York: The Biological Laboratory. \$7.00.

ANON. (1948.) *Standard methods for the examination of dairy products. Microbiological bioassay and chemical.* pp. xxi+373. New York: American Public Health Association. 9th Edit.

ANON. (1950.) *Diagnostic procedures and reagents. Technics for the laboratory diagnosis and control of the communicable diseases.* pp. v+589. New York: American Public Health Association, Ltd. 3rd Edit. £2. 8s.